Videogames Hardware Handbook

From the creators of retro GAMER

20+ classic machines

1980 to 2001
Consoles □ Computers □ Handhelds

The Games Machine Collector's Manual

ACORN ELECTRON

NEO-GEO

AMSTRAD CPC 6128

PLAYSTATION

SINCLAIR ZX80

ATARI 5200

AMIGA 500

GAME BOY

ATARI 800XL

GAMECUBE

OVER 20 YEARS OF THE GREATEST VIDEOGAME NOSTALGIA INSIDE

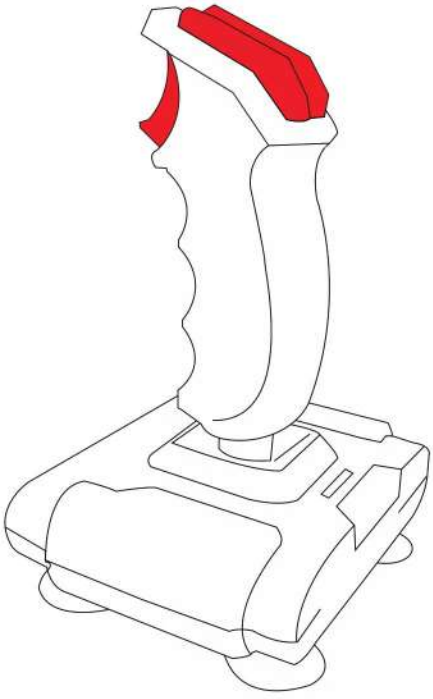
SEGA SG-1000

NES

AMIGA CD32

Digital Edition

VOL2R EDITION



Welcome to Videogames Hardware Handbook

Technological advancement and great gaming experiences go hand in hand, and this bookazine examines how videogame hardware developed from 1980 to 2001 – from iconic classics that set the standard for future consoles, to the handhelds that pushed the envelope when it came to portable gaming. This was an era in which children grew up with videogames that today are described as timeless classics. Explore over 20 years of entertainment as we take a tour of the period's visionary consoles and revolutionary computers. And, as if that wasn't enough, we've even got a fascinating feature on the thinking behind some of gaming's most iconic controllers. All of this comes together to form *the* essential companion for any videogame enthusiast or budding retro collector. There's something for every type of gamer in the Videogames Hardware Handbook, whatever your preferences. Enjoy the book.

FUTURE

Videogames Hardware Handbook

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The Games Machine Collector's Manual

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Over 20 years of classic machines.

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The history of videogame controllers

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THE VERY BEST RETRO HARDWARE

16-BIT
MEGA DRIVE
Mega Drive
Amiga CD32
32bit
AMIGA CD32
Acorn Electron
acorn electron
Game Boy
DOT MATRIX WITH STEREO SOUND
SCORE
377
LEVEL
6
LINES
1
Nintendo GAME BOY™
SELECT
START
ColecoVision
CBS COLECOVISION VIDEO GAME

AMSTRAD CPC

AMSTRAD
64k COLOUR PERSONAL COMPUTER
CPC 464
ESC
TAB
CAPS LOCK
SHIFT
CTRL

With a staggering 3 million sales, there is no doubt the CPC range of computers was a success for Amstrad, even if it trailed behind all of its competitors. We take a look back at why we should learn to love Lord Sugar's plucky little underdog

These days, a new product is a failure unless it attracts a queue around the block a week before it arrives in the shops. It is common to see bedraggled shoppers wrapped up in sleeping bags, carriers filled with nibbles and anxious fingers drumming on warm cups of takeaway coffee.

It would be nice to say the same happened for the Amstrad CPC 464. It didn't – or it certainly didn't to the same degree. Some 60 shoppers waited outside retailer Rumbelows in London's Edgware Square for an hour when the 464 launched on 21 June 1984, although they "rushed forward" when the doors opened at 9.30am, according to *Amstrad CPC 464 User* magazine. By 10.30am 100 computers had been sold, but that kind of thing was deemed a success.

After all, this was only the beginning and similar stories were being told up and down the country. In competing on convenience (Amstrad made much noise about having a green screen or colour monitor bundled in the same package as the keyboard/computer) and price (the 464 cost as little as £239, the price dropping to £199 months later), the CPC became, what the London *Evening Standard* had called the "People's computer", a machine that consumers were willing to hire rather than fire. By the end of 1984, 200,000 units had been sold.

But the story started in 1983 when Sugar – or Lord Sugar as he is known today – was in rather bullish mood, buoyed by considerable sales of his range of hi-fis. These all-in-one units did away with having to buy separate record players, tape decks and radio receivers and it was this allied with the Apple II clones that Amstrad was repeatedly offered for rebadging on its purchasing trips to the Far East that got the London entrepreneur's brain whirring. Lord Sugar felt there was a gap in the market that he could fill.

"So many computers were being aimed at people in technology but the market for the CPC was the lorry driver and his mate," says former group technical manager Roland Perry. "The idea was that the CPC should be a complete ready-to-

LORD ALAN SUGAR

Lord Alan Sugar is not known for his forgiving, sentimental nature but, exactly 30 years after he launched the CPC 464, he took to Twitter to profess: "11 Apr 1984 was a proud day for me". It led to a number of fellow users pointing out that Amstrad is no more today but Lord Sugar hit back. "Many asking 'Where is Amstrad now?'", he wrote. "I sold Amstrad to Sky for £125m in 2007". We briefly caught up with him about the time in between

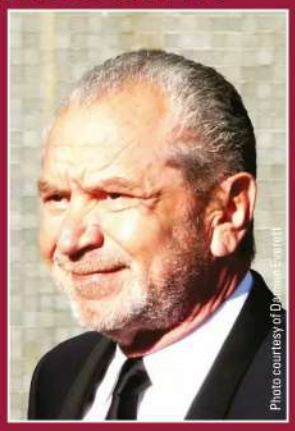


Photo courtesy of Daniel Sinclair

Why did you decide to enter the home computer market?
I spotted that this was a massive growth market and it had suppliers that tried to make it sound like they were offering something special where hardware was concerned. They weren't. We took what we knew in consumer electronics and recognised that we could make them easily and add features and value to make the unit look like a computer and not a pregnant calculator.

Did you have a strong idea about what you wanted the computer to be?
A value-for-money unit that offered a fully integrated system of monitor and data recorder so that you didn't have to plug it into a television.

Was it important for the Amstrad CPC 464 to be an all-rounder?
We made the computer look like a computer and that is what the consumer warmed to as it was not only a good product but it showed true value for money and (consumer's felt) they were buying a real good lump of hardware.

Were you surprised at its take-up, especially in France?
The computer took off well in France as it was a serious looking machine. It became one of our biggest markets.

Why did you buy Sinclair?
We bought Sinclair for its name but also to transform the unit with an integrated data recorder and to make it a proper computer. That's why we sold millions of them and followed on in other markets with the Sinclair success of branding. It allowed Amstrad to move on to more serious computing.

More than 30 years on people are still writing games for the CPC – did you ever expect that?
It is absolutely fascinating to see that the CPC still has a following 30 years on.

» Amstrad snapped up Sinclair, thereby swallowing its closest British rival – angering Speccy fans in the process.

» A big thanks to www.consolepassion.co.uk for kindly lending us a machine for hardware shots. Thanks guys.

go machine; that you shouldn't have to roll around the floor plugging and unplugging things."

With this in mind, the CPC team aimed for simplicity. Lord Sugar had no experience of making computers so he assembled a team that could. Key players were Roland and his childhood friend, William Poel, both of whom were interested in computing and had lots of electronics experience. They took inspiration from the ZX Spectrum and C64, pitching a machine into the same bracket with similar specifications, and by the end of 1983 a prototype was ready.

"We had a prototype at Insight Software in St Helens," says programmer Paul Hughes. "It was pretty much of the final form factor when we got it, bar some bits Dremeled out where the mouldings didn't quite fit. If I remember correctly, there were some extra components and wires soldered on to the PCB to fix teething problems before final manufacture but, all in all, it was pretty much there."

The CPC 464 was unveiled in Westminster School, London, on 10 and 11 April. It had an integrated tape deck and 64K of RAM, expandable to 512K – dK'Tronics sold memory packs but no games took advantage. It allowed for 27 colours in three different resolutions: 160x200 with the use of 16 colours on the screen at once, 320x200 with four colours and 640x200 with two colours (more commonly known as modes 0, 1 and 2). It ran with a 4MHz Z80 processor (in line with the Spectrum) running at 3.3MHz due to tech restrictions created to avoid display snowing. It had an AY-3-8912 sound chip that was nowhere near as good as the celebrated SID chip of the Commodore 64, but

» Like other 8-bit computers, it was possible to add a number of useful peripherals to the CPC

» As you may have guessed, this is actually a Solmon CPC 464, giving a good indication of the machine's global reach

Roland Perry was the technical guru brought in to work on the CPC 464. He worked on all of the other CPCs too

> **The CPC also came with a welcome tape which I wrote with my fair hands**
>
> Roland Perry

headphones could be plugged in for stereo sound. There were colourful keys on the dark grey keyboard. The CPC would output PAL-frequency analogue RGB to the boxy, 14-inch monitor via a 6-pin DIN connector. The monitor also contained the power supply. Later, a bundled TV receiver peripheral was released that allowed the monitor to tune into analogue television signals. "The CPC also came with a welcome tape which I wrote with my fair hands," recalls Roland. "You'd insert that, press Play and it would load and you'd see whizzy rays of sun. It looked like it was doing something straight away."

Software was important for Amstrad, the company figuring that the CPC needed a good range of readily available titles from day one. The CPC 464 came with 12 titles that the company claimed was worth more than £100. They included *Roland In The Caves* and *Roland On The Ropes* – two titles from a series named after Roland Perry – as well as *Bridge-It, Oh Mummy, Harrier Attack, The Galactic Plague, Sultan's Maze, Fruit Machine* and *Xanagrams*. It also came with the word processor, Easi-Amsword. "We distributed between 40 and 50 prototypes to developers and they busily converted Spectrum and C64 games," continues Roland. Amstrad founded a publisher called Amsoft to sell titles for the CPC 464 and it helped stoke the fires of competition. Indeed, when Acorn took out ads that quoted reports about the unreliability of Spectrums, much to Sir Clive Sinclair's ire, Amsoft commissioned a game called *Business Is War* to parody the fight between the two. Programmer Marcus Altman of Alligata had a disaster and lost the source code so it was never released but lots of other games were. "One of the objectives was to launch the computer with 50 games available," says Roland. "You couldn't just launch a computer and say there would be lots of games along for it real soon – you had to produce the whole package."

Spectrum ports were not to everyone's taste, though. Games converted directly from Sinclair's machines to the Amstrad were often slower and had fewer colours.

The similarity between the two machines was one of the reasons why developers ported but time and cost were the overriding factors. Porting marred games such as *Strider, Hard Drivin'* and *Vendetta*, but without it such games may never have seen the light of day on the Amstrad. The CPC was the subservient machine in terms of sales in the UK and it wasn't always easy to produce Amstrad versions. "I found creating loading screens on the Amstrad a bit harder than making something on the Speccy," says graphic artist Mark Jones who produced the Mag Max loading screen for the CPC. "Not only did I have to work in colour, which I hadn't done before, I had about three days to do it. Simon Butler gave me a crash course on anti-aliasing, where you put colour between two touching colours to make the lines less jagged, and away I went. You never had to anti-alias with the Speccy." It was notable that in Spain and France where the Amstrad dominated, porting was far less common.

KEY EXCLUSIVES

Five fantastic games that helped define the CPC range

SORCERY+

PUBLISHER: Virgin/Amsoft
GENRE: Arcade adventure
RELEASED: 1985

■ *Sorcery* was good; *Sorcery+* was better. In adding new screens and developing an extra chapter, Virgin put together a gripping, smooth and addictive disk-only sorcerer adventure that beat the original in every way possible. It combined the CPC's low-res Mode 0 with a higher-res Mode 1 making for absolutely perfect presentation.

GET DEXTER

PUBLISHER: ERE Informatique
GENRE: Graphic adventure
RELEASED: 1986

■ Made in France, the CPC's primary market – and where this game was known as *Crafton & Xunk – Get Dexter* was an isometric, puzzle-solving adventure exclusive to the CPC for around a year. Well-loved, its intricate nature stood it out: destroy a robot, for example, and it exploded with a splash, making the floor mightily slippy for poor Dexter.

MEGA BLASTERS

PUBLISHER: Radical Software
GENRE: Action
RELEASED: 1988

■ Sold towards the end of the CPC's life via mail order, *Mega Blasters* – a clone of *Super Bomberman* – became so highly regarded, it was named the best Amstrad game of all time by members of the CPC Wiki. It's a mega game in every sense, it was spread over 90 levels and it took in 11 worlds. Given it took up 900K of data, it was disk-only.

BURNIN' RUBBER

PUBLISHER: Ocean Software
GENRE: Driving RELEASED: 1990

■ Amstrad needed a title that could be bundled with the GX4000 and Plus range of computers and it found it in *Burnin' Rubber*. Graphically head-turning but sonically ear bending, it was made by Ocean. The dev team seemed to unleash its creativity to produce the best-looking Amstrad game at the time. It boasted subtle shading and had a distinct 16-bit feel.

ZAP'T'BALLS

PUBLISHER: Elmsoft
GENRE: Arcade RELEASED: 1992

■ *Pang* was released solely on cartridge when the ball-popping game finally surfaced on the Amstrad so Elmsoft stepped forward with a CPC version that looked anything but normal. With experience in the boundary-pushing demo scene, Elmar Krieger gave the game a graphical flourish, yet the gameplay was criticised in the UK – much to the annoyance of European CPCers.

» The built-in tape deck proved so popular for Amstrad that it did exactly the same thing when it released the ZX Spectrum +2.

» [Amstrad CPC] Amsoft's *Doors Of Doom* was a horizontal platform-style game that proved to be rather difficult going

» [Amstrad CPC] With big name backing, games like *Space Gun* showed the capabilities of the Amstrad CPC

Amstrad did try and encourage original games, though. Lord Sugar invited the top software publishers to his offices in Brentwood, Essex. He took them to a warehouse where he showed them the CPC 464 hoping to persuade them to develop but although many were impressed, even by March 1985, games for the CPC were hard to come by, making Amsoft even more crucial. One of those in attendance at that meeting was Geoff Brown, founder of US Gold. "I had never met Alan Sugar before then but I had heard about his blunt speaking reputation," he says. "It was obvious he knew nothing about computers, except selling them, and nothing about the games industry or its game fans." Geoff told Lord Sugar about the coin-op conversion of *OutRun* which had zoomed to the top of the charts for other formats. He told the Amstrad boss he would go back to Sega and ask for extra permission to port the game to the CPC 464. "He snarled back, 'bloody driving game; we can easily get one of those written, no problem'," says Geoff. "He told me he didn't need coin-op conversions or licences." The big games did eventually come in droves, though. Indeed, *OutRun* became one of the biggest successes on the Amstrad in 1987. Sadly, it was an awful conversion with a slow pace and ugly sound effects.

> **"I had never met Alan Sugar before then but I had heard about his blunt reputation"**
> Geoff Brown

By this time, the CPC had evolved into a small family. The CPC 664 was identical to the 464 except it came with a disc drive instead of tape (and was incredibly ugly with light blue keys). It was ditched within months to make way for the 128K CPC 6128. Other than the extra memory and the disk drive, it retained the core of the 464's tech complete with monitor and it retailed for £299 (green screen) and £399 (colour). It also had a tape port so that a cassette deck could be plugged in. Gamers could enjoy the likes of *Doors Of Doom, Hunchback I* and *II, Roland In Time, Nomad, Supertest – Day 1* and *Day 2, Quabbalah, Tubaruba, World Series Baseball, Monopoly, Cluedo, Scalextric, Scrabble* and *Trivial Pursuit*, a rather solid selection of games that proved to be a reasonably good introduction to the CPC.

Both the 464 and 6128 proved to be an eventual hit for software developers. Ocean Software's David Ward said the Amstrad user base was newer and more active than those of other machines. "They buy more software," he said. Most games were released on both tape and disc in the UK but in France discs were more popular so many of their releases did not get an airing on tape and they tended to be 128K-only.

There was a feeling at times that the CPC was a money-making machine first and foremost, though. Lord Sugar was never interested in producing a cutting edge computer ("It doesn't put money in the bank," he told *Amstrad Action*) and he wasn't particularly interested in market share even though, by 1985, the Amstrad CPC had 25 per cent of the market ("I could have 100 per cent of the market in thimble holders but it wouldn't make me any money, would it?" he said). Neither, it seems, was Lord Sugar all that interested in powering up the blue

THE CPC RANGE

CPC 464

■ From the early white prototypes came the dark grey 464. Boasting a Z80A processor, 64K RAM, 27 colours, three screen modes ranging from 160x200 to 640x200 and support for up to two joysticks, buyers had a choice of colour or green monitor. And gamers cried if their parents got the latter.

CPC 664

■ The 664 was an ugly, 3-inch disc drive version of its cassette-based sister with some lurid blue keys and the same 64K of memory. It remained on the shelves for just five months and sold 10,000 units. But it introduced AMSDOS and came with CP/M 2.2, and it allowed games to run faster.

CPC 6128

■ A slimmer and more stylish computer than the 664, the 6128 doubled the memory and removed the colourful keys, making for a more serious-looking offering. "It's definitely not a Mickey Mouse machine," Lord Sugar said at the time. It became the computer of choice in France with some great, disc-only exclusives being made.

Photo courtesy of Bill Bertram

screen himself. Roland says Lord Sugar did not have a 464 on his desk but that he never expected him to. "Does the MD of a bicycle factory have to ride a bike to work?" Roland asks. "He can afford a Jaguar with a chauffeur. Alan was not the target market for the computer and he was building machines for other people, not himself."

But for those who used the machine, it opened up creative possibilities thanks to Amstrad wanting to have as open a system as possible. "We wanted people to use the machine and not feel that what was happening inside it was mysterious," says Roland. It worked well. "The CPC sat nicely in the midst of the computers that came out in the Eighties," says developer Philip Oliver. "It was cheaper and more accessible than a BBC Micro, with a better keyboard and graphics than a Spectrum. It was more British (and better) than the Commodore 64. We used the CPC to develop *Super Robin Hood* and we led on the CPC for all our games after that." To foster loyalty to the CPC and lend a helping hand, Amstrad formed an Amstrad User Club. It included a subscription to *Amstrad Computer User* magazine, which encouraged people to program ("We pay well," said an editorial in issue 10). "We paid a lot of attention to making a computer that people could program themselves," said Roland. "The manual wasn't just about telling you where to plug things – it had a lot of stuff about Locomotive BASIC and it had tutorials. Programming was important to us."

Rod Lawton was Amstrad Action's longest serving editor from December 1989 to February 1993

The main independent publication, *Amstrad Action*, was also instrumental in building support but former editor Rod Lawton was acutely aware that the CPC was often given a rough ride. "We got on pretty well with the Spectrum community, even though we thought the computers (and the users) were a bit weird," he says. "It seemed all right for geeks and home programmers, but we thought the CPC was more of a finished product. The C64 was a different kettle of fish. It was an American import, it was used by gaming fans who thought they were a cut above the rest of the 8-bit community, and we kept our distance. They were like, 'yeah, obviously, the C64 is much better for games,' and we were like, 'yeah, whatever'."

By 1990, six years after the CPC 464 had launched and five years after the 6128, Amstrad took the range in a new direction. Noticing the console market was growing, it redesigned the casing of the two machines and added a cartridge slot. The computers were relaunched as the 464 Plus and the 6128 Plus and there was a standalone console called the GX4000 that was styled like a spaceship. Suddenly, Amstrad wanted something more cutting edge – except it failed to deliver.

"All kinds of people were trying to adapt their general purpose computer designs to compete with games consoles so we tried the same," says Roland. "I think, in hindsight, that the only thing to do was design a console from scratch and not try to bolt functionality to what we had."

The computers ran into problems straight away. A handful of existing games were not compatible which deterred a few potential upgraders. The 6128 Plus did not have a cassette deck port. But the instant loading cartridge slot, the 4,096-colour palette and the 16 hardware sprites, hardware scrolling, programmable interrupts and DMA for the AY soundchip certainly pushed the new CPCs closer to the Atari ST and Amiga. The bundled game, *Burnin' Rubber*, looked delicious.

It wasn't enough. Poor sales of the computers and the console – which was being discounted by £30 within six months – ensured there were too few games (and those that were released tended to be ports). The CPC was no more and Amstrad moved on. Developers found a way of harnessing the Plus capabilities with disc and tape-based games which ensured buyers hadn't wasted their money (benefiting from *Space Gun*, *Fluff* and *Prehistorik 2* among others) but it was clear the 8-bit era had come to a close.

During the Eighties, though, the CPC had become France's best-selling computer. The range had swallowed up 50 per cent of the market, selling 650,000 machines. In total, the CPC sold 3 million across the world and while that was fewer than the 17 million C64s and 5 million Spectrums, it was enough to ensure it was the third 8-bit machine and enough to declare it a resounding success.

The colours were garish, but having a built-in tape deck was extremely useful. It was surprisingly hardy as well.

464 PLUS

■ In 1990, Amstrad replaced the CPC range with the restyled Plus machines. The 464 Plus looked Amiga-esque and it had a slot for cartridge games as well as a tape deck. It came with a game controller paddle, the game *Burnin' Rubber* and a monitor. The Plus features allowed the use of a palette of 4,096 colours.

6128 PLUS

■ Like the 464 Plus, the 6128 Plus was basically the old CPC 6128 in a new style with a cartridge slot. The extra capabilities were supposed to be for cartridge games only but programmers were able to get around that. The 6128 Plus did not have a tape deck port, which persuaded a fair few against upgrading.

GX4000

■ Amstrad's 8-bit console had a Z80A processor running at 4MHz – identical to the CPC – but it had a Direct Memory Access controller so music could be played without burdening the processor. With 18 hardware sprites, 4,096 colours (32 displayable at once) and smooth scrolling, it would have been a hit – five years earlier.

CPC 472

■ It claimed to have 72K of RAM but it only allowed 64K to be accessed and it was designed to get around Spanish import tax laws. It said the extra memory supported BASIC. It didn't. The 474 did include the CPC 664 ROM with Locomotive BASIC 1.1, though. And Spanish keyboard versions added a statutory 'tilde' key.

Photo courtesy of Evan Amos

SEGA MEGA DRIVE

THE MEGA DRIVE WAS SEGA'S FIRST SUCCESSFUL CONSOLE. SOME ARGUE IT WAS ALSO ITS LAST, HAILING A BELLEROPHON STYLED RISE AND FALL. IT REPRESENTS SO MANY THINGS, TO SO MANY PEOPLE, FOR SO MANY REASONS. WE TRY TO CAPTURE SOME ESSENCE OF WHAT IT ALL MEANT

Modem Wars

Sega dabbled in modem usage for the Mega Drive. Nagumo-san explained, "It was called Mega-Modem, whose sales date was November 3, 1990. It is a modem unit for Mega Drive that enabled online game communication. It used analogue lines and its connection speed was 1,200bps. The service named 'Game Toshokan' enabled downloading of games, delivery of Sega-related news and online matches." Records vary wildly on how many games utilised online play (one source stating six). We only found solid confirmation regarding *TEL TEL Mah-Jong* and Stadium titles. More interestingly was the 'Game Toshokan', which allowed downloading of games like *Phantasy Star* text adventures, *Pyramid Magic* and *Flicky* to a special cartridge. Closing in 1993, fans worried the online-only games would be forever lost. Luckily in 1994 there were two Mega-CD compilations, *Sega Games Can Vol 1* and *2*, which included nearly all-available titles. Prized among *Phantasy Star* collectors, these are incredibly rare.

Nintendo's fate has often been intertwined with the Mega Drive system. It has long had a history of benefiting from Sega in one form or another, often due to the direct competitive challenge it posed. The SNES would have been nothing without the MD; the reverse is also true. It was the Mega Drive that pushed Nintendo into updating its aged NES hardware, and it was also the Mega Drive that changed the market forever, cutting a trail towards the situation today. It is undeniably one of the most important pieces of hardware in gaming history. So it should have come as no surprise to find that MD games would support Nintendo's soon-to-be-released Wii system. In a moment of irony, it must be noted that Sega had already dabbled in downloadable MD games with The Sega Channel, making its announcement quite apt. The decision was obvious. Later Sega systems would prove difficult, technically, and also the MD was far more successful than the Master System. As will be shown, the MD can be credited for many things – it was a magical high Sega never again reached.

The Japanese debut was October 29, 1988. The widespread American release was less than a year later in 1989, while the United Kingdom had to wait roughly another year before it arrived in November 1990. To fully understand the importance of the Mega Drive's launch, you need to know what the international climate was like during the decadent Eighties.

Sega had already entered the console fray previously, with the successive releases of its SG-1000 Mark I, II and III systems in Japan (1981-1985), the 3rd model of which was redesigned as the Master System for Western countries. Despite it being technically superior to the Famicom/NES, it was a commercial failure that never gained more than a 5 per cent market share. Only in Brazil was it able to officially eclipse Nintendo's 8-bit hardware. Throughout the mid-to-late Eighties Japan's console market was controlled almost entirely by the Famicom, which was popular beyond description. America was gripped by the NES, again with near total market dominance. The NES was also available in Europe and the UK, though Britannia was more enamoured with 8-bit micros than high-priced consoles.

In 1987 Hudson Soft and NEC jointly released the PC-Engine against the Famicom, two years later redesigning and releasing it in America as the TurboGrafx 16. When Sega decided to position its MD as a third competitor, the odds must have seemed impossibly high. According to David Sheff, Hiroshi Yamauchi dismissed Sega as not being a threat. Yamauchi was more concerned with NEC, which was investing roughly $3.7 billion into R&D, an amount greater than Nintendo's then annual sales. Sega meanwhile was only a $700 million company, and one founded by an American. As an underdog scrapping against NEC for second place, Sega and its MD was underestimated,

SEGA MEGA DRIVE

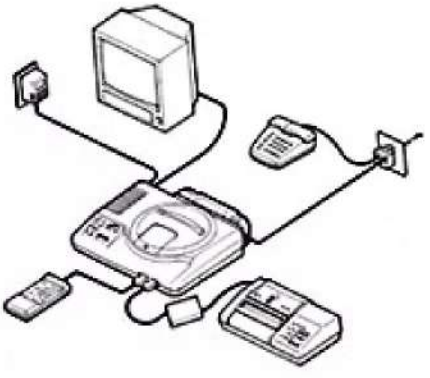
Year released: Japan: 1988 USA: 1989 UK: 1990

Original price: Japan: 21,000 Yen USA: $189.99 UK: £189.99

Buy it now for: £10+ with games

Associated magazines: Beep! Megadrive, Mega Drive Fan, GameFan, Mean Machines, Sega Visions Magazine

Why the Mega Drive was great… The Mega Drive ushered in the 16-bit era; some say the last golden era of gaming. It was a special kind of scene to be a part of. No explanation, no mix of words or screenshots or memories can ever touch that sense of knowing, that you were there, playing those great games during that point in time. Though this age has sadly passed, newcomers still need to understand.



» **Above and right:** For ultimate collectors and those wanting to use the Mega Drive for online banking: the Sega Mega Anser (sic).

"ATARI WAS OFFERED THE GENESIS AND JACK TRAMIEL TURNED IT DOWN. JACK THOUGHT THE DEAL WAS TOO EXPENSIVE" MICHAEL KATZ

Hybrid Children
A sign of the Mega Drive's popularity is the number of variations that exist. Beyond your standard models, there was the JVC Wondermega (Xeye in America), which combined MD and Mega-CD. Then there was the much smaller combined Multi-Mega (CDX in America), doubling as a portable CD player. Following this musical theme, there was the Aiwa CSD-GM1, combining the MD/MCD with a portable "Boom Box" radio. From CD to LD, Sega's champion was also included with Pioneer's Laseractive. MSX fans will be interested to know it was integrated into the AX-330 and AX-990 models, for Arabic distribution in Kuiwait and Yemen. Computer implementation didn't end there, since it was also hybridised into the Sega TeraDrive, a Japanese home computer. Meanwhile, the Western equivalent was the Amstrad Mega PC (see buyer's guide). Then there was the portable Nomad, and the Mega Jet, which was used by Japan Airlines. And the above doesn't even take into account the many bootleg clones about!

viewed by the industry itself as the weaker of the two. Retro Gamer spoke with Mr. Nagumo, the "Team Manager of SOJ CS Product PR", and asked many, many questions, few of them answered. When asked if, due to the impossible odds stacked against them, Sega had considered becoming a developer for either the Famicom or PC Engine, his answer was blunt. "No, we didn't."

Even so, Sega staff were curious about the Famicom. In two separate interviews (GameWeek and TNL) Yuji Naka admitted to making Famicom games run on the MD. His comments, amalgamated, were, "Oh my. [laughs] How do you people know about that one? Well yeah, actually I did. I once made a Famicom emulator for the Mega Drive. It was something fun to amuse myself with at the time. I couldn't play every game with it. But it was fun to call people over and show them Mario running around on a Mega Drive."

ORIGINS OF GENESIS

Sega's main source of profit during the Eighties was its hugely popular arcade games, like Yu Suzuki's *Space Harrier* and *Hang On*. To beat the competition the head of Sega, Hayao Nakayama, decided to create the first true arcade home system. He worked in secret with Hideki Sato, modifying Sega's System-16 hardware – the same hardware that powered arcade versions of *Shinobi* and *Altered Beast*. This would have allowed superior visuals and audio, leagues ahead of the competition. It would also allow for easier, more accurate arcade ports (which gamers would be familiar with), and therefore plenty of games.

The new console had to be scaled down from the System-16, in terms of processor speed and available on-screen colours, but Hideki Sato planned ahead and included some extras. It was backwards-compatible with the Master System (using the Power Base Converter), and it was also designed with the future potential to use a mouse, keyboard, 2-inch floppy disk drive, modem, graphics tablet, and printer. He even considered the possibility of someday attaching a CD drive.

Beep!, a multiformat Japanese mag, first announced the system in June 1988 alongside an early prototype drawing, tentatively calling it the Sega Mark V (following on from previous names). The internal project meanwhile was called Mk-1601, but Sega wanted something stronger for the launch. It went through 300 different proposals, before finally settling on Mega Drive.

Disappointingly the Japanese launch was very understated. Their penchant for lengthy, mind-boggling queuing in Akihabara had been forgotten; there were no such queues for the MD! Supply and publicity had been well organised, but the machine was overshadowed by *Super Mario Bros 3*, released just one week earlier. Luckily magazines

» Most Mega Jets being sold come from an initial shipment hijacked by Indonesian sea-pirates. Their distribution was organised by underground collectors.

» A young Hideki Sato working on a prototype Mega Drive; he was the main designer behind it.

» There are countless unlicensed Chinese (and Korean) games, like *Barver Battle Saga – The Space Fighter*. It was renamed *Final Fantasy* when translated into Russian.

» **Above and below:** By using the Power Base Converter, the Mega Drive could play Sega's back-catalogue of Master System games.

like Famitsu and Beep! gave it positive coverage, and so a small but loyal following began. Reportedly 400,000 units were shipped in the first year.

Despite the low uptake in Japan, Sega went on to pursue highly risky and quite odd endeavours – bad for profits, great for collectors. Along with a gaming modem (see box-out), Sega created an online banking system for Nagoya Bank. The result was the Mega Anser (sic), complete with modem, numerical keypad, and grossly overpriced 'Mega Printer'. Sega also adapted the MD for arcade use, despite it already being based on the System-16 architecture. The results were the System C-2 board, and also the timed MegaTech and then MegaPlay systems; roughly, these three had a combined total of 80 games developed. Japan also received the rarest version of *Tetris* ever, and some sublime exclusive RPGs like *Rent-A-Hero* and *King Colossus* (both fan-translated).

But Japan was never what the Mega Drive was about. Success lay in the USA and Europe. Sega had the fight of its life ahead, and it would take not only gutsy determination to succeed, but also a damned excellent roster of games, and luck. Sega clearly had just enough of these, since it nearly conquered the industry.

GLOBALLY GAMED

To bolster the inside information available to Retro Gamer, Ken Horowitz of **Sega-16.com** kindly donated interviews he conducted with industry figures. One such individual was Michael Katz, former head of Sega's American branch, who presided over the Genesis' initial sales year. Katz explained the early days. "I arrived one month after Genesis launched. The company was small (under 50 people). They had gone through 2-3 Presidents (Gene Lipkin, Bruce Lowery) in the "Master System" days. Dave Rosen – Vice Chairman of Sega (and original founder), was overseeing the running of the company. I reported to him and Nakayama in Japan. Sega was basically a distribution company in the US. Hardware and software development came from Japan. I initially had to deal with keeping employees happy, determining the quality of the staff and getting into the job of building the Sega vs Nintendo juggernaut." Arriving after the American launch, Katz wasn't aware of the details surrounding the name change from Mega Drive to Genesis. Consensus states it was due to a trademark dispute. The facts are blurred, but point possibly to a US manufacturer of storage devices called Mega Drive Systems Inc.

We also questioned Katz ourselves, and he revealed a fascinating anecdote from before the Genesis launch. "I will tell you that Atari was offered the Genesis (when I was President of Atari Games Division) and Jack Tramiel turned it down. It would have gotten Atari back in the game with a 16-Bit system. I attended the meeting at Atari, when Dave Rosen (Sega Chairman) visited us (Jack and I) and made the offer. Jack thought the deal was too expensive, and he was more interested in the Atari ST computer project." The system filtering into America and Europe raises an important question for importers. Why the deplorable need for regional lockout? Katz admitted he had no control over it in America, "Lockout decisions were made in Japan. The Sega Japan International VP handled international sales and marketing." Never knowing when to quit, Retro Gamer pushed Japan's PR man into a corner until he commented. As Nagumo puts it, "We implemented the security regionally to prevent game software being imported due to gaps of sales time between regions." As he wipes the sweat from his brow, we jovially comment that thankfully it wasn't successful. Enterprising young hackers soon bypassed the security with special contraptions, and later, easy methods for modifying the hardware were devised.

» The rarest most expensive version of *Tetris*. Ever. You need underground contacts and plenty of money to join this elite 'owners club'.

"IF FORCED TO SUMMARISE WHY THE MD IS SUCH A BLOODY FANTASTIC SLAB OF BLACK PLASTIC, IT'S BECAUSE IT'S ALL THINGS TO ALL GAMERS"

Channel Control

The Mega Drive has so many unusual anecdotes you need a hundred box-outs like this. With the announcement of downloadable MD games for Wii, we're highlighting the revolutionary Sega Channel.

Speaking with Nagumo-san again, we hoped for a pride filled statement that championed this pioneering achievement. His answer was somewhat subdued, "It was a cable television service in the US from which videogames could be downloaded. We started the service in cooperation with Telecommunications, Inc. One could play his favourite games as much as he liked at a fixed amount every month. We also had the same services in cooperation with regional cable televisions in Japan."

From 1993 games were made available for download (divided by genre), at a cost of $12.95 per month. Games were rotated every few weeks, encompassing nearly the entire library, plus a few unreleased titles and imports! They could be played indefinitely, but lasted only while the system was turned on.

» With an unprecedented comic book styling, *Comix Zone* was one of many exclusive titles that made the MD worth owning. An astoundingly good brawler.

"IT WAS A SYSTEM WHERE THE ALLURE WAS BORN NOT ONLY OF THE HARDWARE AND GAMES, BUT THE MAGAZINES, PLAYGROUND ARGUMENTS, CLIMATE, AND POLITICS OF THE TIME"

Underground importing certainly didn't harm international sales. The MD is officially Sega's highest selling system. International figures are estimated to be between 30 and 35 million units, of which only 10 per cent is attributed to Japan. Sega was determined to achieve those higher sales abroad; it demanded the American branch chant the Japanese word "HYAKUMANDAI" (that's "one-million" in English), in order to encourage sales. Katz elaborated, "The 'one million units' chant was representative of a goal set by Sega Japan. Did they just pluck the number out of thin air? I don't know. I think they thought that if we sold a million units in the first year that would make a big statement. They disregarded Nintendo's position and the fact that all key retailers would have to come on board immediately to hit the number, and also the need for a substantial software library from the get-go." Despite the daily chanting, sales only reached halfway. Katz went on, "We sold about 500K units – which I considered damn good – because Genesis was new, didn't have a large software library initially, and the Nintendo franchise was hard to crack."

In America it seemed Nintendo was unstoppable, and that was indeed its intention. It used some very unorthodox methods to maintain superiority. Stores were bullied into not carrying Sega products, and developers were forced to sign strict licensing agreements stating they'd only develop for Nintendo. But everyone loves seeing a tyrant deposed and a colossus fall, and so various developers began thinking of the Mega Drive as a serious, more profitable alternative. Popular companies like Namco changed allegiance, while EA reverse-engineered the system before developing high quality exclusives. This all helped make Sega a tempting alternative for consumers.

But as Katz explained, Sega wasn't too pleased with EA. "Sega was unhappy about EA reverse-engineering Genesis. We were in the process of giving EA/Trip a 'sweetheart' deal, then we needed a *Joe Montana* game in a hurry (the game being developed for us by Media Genic was way behind schedule), so I asked Trip for a back up *Madden* football game. He gave us one and that assured him a low/royalty free deal on Genesis software. The first *Montana* game being a '*Madden* back up' from EA is a little known fact."

The MD's huge success, of course, came with the arrival of *Sonic The Hedgehog*, a phenomenal mascot that endures to this day. But the question that has to be pondered is what if *Sonic* had not been a hit and never had the success that it did? When asked, Nagumo playfully hinted at the possibility that Sega had other titles, besides *Sonic*, with which to take on Nintendo and *Mario*. "We had the marketing and promotion strategies using various titles at that time. *Sonic* was one of them that led to a big hit." Katz saw things differently. When asked about SOA's initial dislike of the Sonic character, "I certainly underestimated the potential of *Sonic*. Thank God there was good and sustained gameplay (critical in any game success). I know that I thought it was nuts, when we were going for targeted and widespread awareness in everything we did, for the Japanese to develop a game based on a type of character – a hedgehog – that no kid in the American 6-16 year-old demographic would have any familiarity with. We knew we needed a great "character action" game to put in the line up. We were hoping for a *Donkey Kong* type hit. When *Sonic* was so hot, it was decided to bundle it with Genesis (just as ColecoVision was bundled with *Donkey Kong* in 1981). If Sega didn't have *Sonic*, Genesis sales would probably have been less, but it's hard to say. I don't know if Sega Japan had a back up – I think not. Sega Japan was responsible for developing the character action genre. We were responsible in the US for developing sports games."

Despite his great effort and the success he achieved in those early years, Katz was replaced by Tom Kalinske in 1990. Most agree that any successes were a result of combined team efforts, but that Katz is often unfairly overlooked in favour of his successor. In past interviews, Kalinske explained how *Sonic* became the pack-in title. "After my first month as CEO, I told Mr. Nakayama, 'You have to get rid of *Altered Beast*, the title that's bundled with Genesis. It sounds like devil worship. We have to get the price down to $149, and we have to develop more American software.' The board spoke for two

» Japan's "Hyper Exciting Visual Game Magazine – Mega Drive Fan" was one of several dedicated publications.

» **Top and bottom:** The anime influenced *Phantasy Star* series reached its peak with number 4. Few RPGs even come close to such magnificence.

» **Above and left:** Smooth like liquid napalm, *Ranger X* by Gau Entertainment is a frenetic blaster, with audio and visuals that'd melt the brain of those unaccustomed to such splendour.

hours in Japanese and I was just sitting there, not understanding a word. Finally Mr. Nakayama said, 'No one here agrees with anything you've said.' I thought mine was going to be the shortest career in the business. But as I was walking out, he said, 'But I hired you to make the decisions for Europe and the Americas, so go ahead and do it.'"

Sega eventually annihilated the TurboGrafx 16, and it was doing well against the NES, but the sleeping giant had awakened, and in 1990 Nintendo launched the SNES. The ultimate grudge match began, which even today, remains fresh in peoples' hearts and minds. Nintendo had on its side Japanese stalwarts Square and Enix, which made Sega's conquest of Japan nigh-on impossible, but it had already proven itself to be hip and cool in the West, and this is where it succeeded. Sega was out earlier, priced cheaply, and provided both what people wanted, and what its rivals weren't supplying.

Everyone deep down knew the MD couldn't outperform the SNES; it was the underdog in terms of graphical and audio power (it had a faster processor though). Developers had to work harder to get great results. This extra effort, and dare it be said, love, that went into the games, was very apparent – when they came up wth a graphical trick, or something unique, it showed. The Genesis had more mature software and was also advertised on adult TV like *Saturday Night Live*, further cementing its reputation as "doing what Nintendon't." But the big tipping of scales was *Mortal Kombat*. Sega's version had blood and included all arcade fatalities; Nintendo's version didn't. The atmosphere at the time was electric, and *Mortal Kombat* was a deciding factor for many people's purchases.

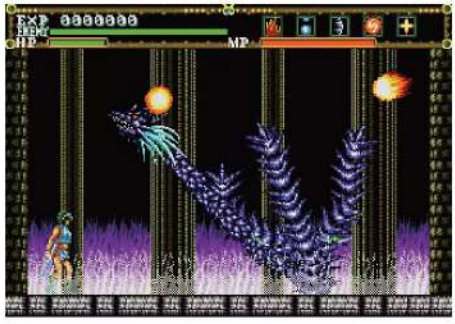
By 1992 Sega had 55 per cent control of the market (up from around 8 per cent), and by 1993 it had more than quadrupled its net worth (up to $3.6 billion). Sega had reached its peak. But over the coming years it became like a leper, withering as its valuable bits fell off. The golden era ended, but if you look with the right kind of eyes, you can almost see the high water mark, where that glorious wave broke, and finally rolled back.

If forced to summarise why the MD is such a bloody fantastic slab of black plastic, it's because it's all things to all gamers. It appealed to hardcore elitist collectors, since it was great to import for. Plenty of action games (like *Alien Soldier*, and the explosively magnificent *Ranger X*), with sturdy boxes protecting beautiful Japanese cover-art. When SNES-owning friends had updates of Konami classics like *Contra* and *Castlevania*, MD owners were blessed with their own exclusive updates. They were no mere ports, but were designed from scratch, taking into account the hardware's limitations. And they were all the better because of this. There was no relying on vast colours or a custom Sony music chip; the gameplay had to be strong.

Importantly, it tapped in the mass market and appealed to families with low incomes. In impoverished areas in the USA it was popular among Black and Hispanic youths, who enjoyed the affordable easy-to-play arcade thrills provided. Children were also catered for, with both licensed and new IPs (*Quackshot* and *Toejam & Earl*). When the kids were tranquilised and asleep in bed, parents could indulge in a plethora of sports titles (*Madden* etc), violent brawlers (*Cyborg Justice*), or cerebral games like *Ecco*.

It was a system where much of the atmosphere and allure was born not only of the hardware and games, but the magazines, playground arguments, climate, and politics of the time. One of the most notable American magazines covering the system was GameFan, which, despite being multiformat, loved the Genesis. Its founder, Dave Halverson, understood, appreciated, and helped generate a lot buzz for Treasure too. GameFan praised their games, rightfully hyped up *Gunstar Heroes* to encourage sales, and were one of the very first English language magazines to conduct an interview with Treasure. Of course, not every multiformat magazine had quite the same views, which is why Edge infamously only gave *Gunstar Heroes* a half-page 6 out of 10 review. If you were an MD fan back in the early 1990s, Halverson's GameFan was the magazine you wanted to be reading!

We've not even yet mentioned subjects like the VR headset, Menacer Gun, Activator peripheral, *Virtua Racing*'s 3D graphics, pirate flash carts, Brazilian rock band Megadriver, Boris Vallejo, or the million-and-one related subjects. But it doesn't matter. Experiencing the system will tell you more than these words ever could.



» **Top and bottom:** *El Viento* and *Alisia Dragoon* are two very similar, very fun, and very Japanesey action-platformers.

» **Top and bottom**: Konami knew how to love MD owners: Insane hyper-exaggerated action in *Contra*, and classic vampire hunting in *Castlevania*.

» Every kid wants to rip his best friend's spine out. The uncensored Sega version shifted the tides between MD and SNES popularity.

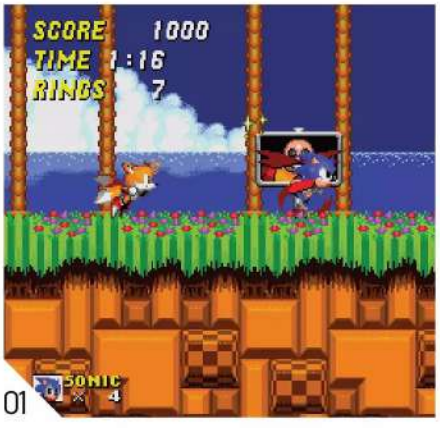
SPECIAL THANKS TO

Many special thanks to **www.sega-16.com**, the best unofficial Mega Drive site online, for donating interview segments and images. Visit them for the full interviews! Thanks also to **www.segagagadomain.com** for images, Michael Katz for answering additional questions, and Sega's PR departments!

» There was certainly no shortage of exclusive, epic, and utterly essential action-RPGs: *Beyond Oasis* (1), *Soleil* (2), and *Landstalker* (3) are all must-haves!.

PERFECT TEN GAMES

Sega's most successful console is home to dozens of great titles, but here are ten of the very best. Obviously, you may disagree with some of the entries, or perhaps with some of the omissions, and if you do let us know. Then we can politely explain to you why we're right and you're wrong. Enjoy



01

SONIC THE HEDGEHOG 2

- **RELEASED:** 1992
- **PUBLISHED BY:** SEGA
- **CREATED BY:** SONIC TEAM
- **BY THE SAME DEVELOPER:** SONIC THE HEDGEHOG

01 After the success of the original *Sonic The Hedgehog*, it came as no surprise to see the lovable scamp returning a year later in a brand new adventure. With a refined engine, the addition of Miles "Tails" Prowler, a greatly enhanced bonus stage and an excellent two-player mode, *Sonic The Hedgehog 2* is easily one of the hedgehog's most memorable 16-bit outings. While the core gameplay is little different to that seen in the original, Sonic Team threw in plenty of new touches to ensure that gamers wouldn't feel short-changed. The end result is not only one of the Mega Drive's greatest platformers, but quite possibly the hedgehog's finest hours on any system.

GUNSTAR HEROES

- **RELEASED:** 1993
- **PUBLISHED BY:** SEGA
- **CREATED BY:** TREASURE
- **BY THE SAME DEVELOPER:** DYNAMITE HEADDY

02 Outrageously good platformer/shooter that features dazzling graphics, a crazy relentless pace and dozens of fantastic boss encounters. Created by a bunch of ex Konami staffers (you should all know the story by now) *Gunstar Heroes* does tricks with the Mega Drive's hardware that many thought impossible, and even today it has a freshness that belies its 13-year-old roots. While special mention must obviously go to the game's astounding visuals, Treasure also ensured that the gameplay was just as special and injected all manner of interesting play mechanics to ensure that every level remains as fresh as a proverbial daisy. If you're after a frenetic blaster then look no further. This is run-'n-gun heaven.

02

DEVIL CRASH

- **RELEASED:** 1991
- **PUBLISHED BY:** TECHNO SOFT
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** THUNDER FORCE III

03 There's a few pinball games on Sega's Mega Drive but this superb 1991 offering from Techno Soft remains a firm favourite. While it only features one main table, it's well designed and boasts all manner of different bonuses that lead you to several smaller, mini-tables. While Techno Soft's previous pinball title *Alien Crush* featured an alien theme, *Devil Crash* has chortling knights, chanting monks and dragons occupying its tables. Released in the UK as *Dragon's Fury*, *Devil Crash* is a superb pinball game that should last you forever. Oh, and it's got one of the most rocking soundtracks we've ever heard.

STREETS OF RAGE 2

- **RELEASED:** 1993
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** STREETS OF RAGE

04 As with *Sonic The Hedgehog 2*, Sega took everything that made the original *Streets Of Rage* so fun to play and turned it up to 11. The visuals have had an overhaul with all the heroes and enemies being beefed up and boasting greatly improved detail. Yuzo Koshiro is back with another thumping soundtrack and the game's many bosses are tougher than ever. Each character now has a selection of special moves and there are four different protagonists to choose from: Axel and Blaze from the original game and new boys Skate and Max. A magnificent scrolling fighter that's crying out for a next-gen remake.

STRIDER

- **RELEASED:** 1991
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** AFTER BURNER

05 Oh come on, did you really think we'd do a Mega Drive top ten and not feature *Strider*? Despite Darran's obsessive love for Capcom's purple clad ninja (it's a long sad story) *Strider*'s addition is easily justified, as it's quite simply the strongest arcade port on Sega's 16-bit console. Not only does it capture all the character of the coin-op classic, it goes one step further and delivers a stunning soundtrack that actually manages to improve on the arcade original. Sure there's a fair amount of flickering here and there but as far as capturing the essence of the original game goes no other Mega Drive conversion comes close. Essential.

03

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DESERT STRIKE: RETURN TO THE GULF

» **RELEASED:** 1992
» **PUBLISHED BY:** ELECTRONIC ARTS
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** JUNGLE STRIKE

06 Set a year after the events in the Gulf War, *Desert Strike* sees you climbing into an Apache and using it to stop a despot in the Middle East from starting World War III. Utilising an isometric viewpoint, EA's blaster saw you storming into armed bases to rescue POWs, whilst using your firepower to take out anything that stood in your way. Despite the destruction you can cause, *Desert Strike* is quite a cerebral affair, with many of the later levels requiring a fair amount of strategy to complete. The thinking man's shoot-'em-up.

SHINOBI III: RETURN OF THE NINJA MASTER

» **RELEASED:** 1993
» **PUBLISHED BY:** SEGA
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** THE REVENGE OF SHINOBI

07 Despite a lengthy development period, *Shinobi III*'s four-year wait was worth it. Not only has the pace been increased, your ninja now knows a selection of new skills. Flying-kicks, a running dash and using your hands to swing across ceilings are just a few of the new abilities you can use and all have been perfectly integrated into the game. There are even sections where you can ride horses or surf along the crest of a wave, dispensing bad guys as you go. If only the later games showed a tenth of the imagination of *Shinobi III*...

ECCO THE DOLPHIN

» **RELEASED:** 1993
» **PUBLISHED BY:** SEGA
» **CREATED BY:** NOVOTRADE INTERNATIONAL
» **BY THE SAME DEVELOPER:** JAWS UNLEASHED

08 Delightful underwater adventure that sees you trying to rescue your dolphin friends when they all get sucked up by a mysterious hurricane. With its focus on exploring the expansive stages and its many devious puzzles, *Ecco The Dolphin* was quite unlike any other game at the time and instantly caught the public's attention. The underwater environments are full of detail and bursting with all sorts of exotic undersea creatures. Our only real complaints with Ecco is that some of the sections can be difficult to negotiate, ruining the otherwise tranquil atmosphere.

09

THUNDER FORCE IV

» **RELEASED:** 1993
» **PUBLISHED BY:** SEGA
» **CREATED BY:** TECHNO SOFT
» **BY THE SAME DEVELOPER:** ALIEN CRUSH

09 While *Thunder Force III* was never released in the UK, Sega atoned by releasing its superb sequel in 1993. Techno Soft's fourth *Thunder Force* title (and the third to appear on the Mega Drive) boasted amazing visuals, over-the-top weaponry and a stunning soundtrack that perfectly complemented the frenetic on-screen action. As with *Thunder Force III*, the first four levels could be approached in any order, but the stages themselves were far larger in scope and featured both vertical and horizontal sections. Throw in some insanely tough bosses, plenty of exotic locations and those stunning visuals and you have one of the Mega Drive's classiest shooters.

SHINING FORCE II

» **RELEASED:** 1994
» **PUBLISHED BY:** SEGA
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** SHINING FORCE

10 While it essentially features the same combat system and gameplay mechanics as the original *Shining Force*, Sega's sequel is generally considered by many to be a far superior RPG. Take the combat for example: it's a lot quicker now, making fights far less of a chore than before, and the new counter-attacks add a great degree of spice to the proceedings. The interaction of items is also better integrated with little touches like automatically passing a picked up item to another character when your main hero's pockets are full, and being able to view an item's stats before you buy them means that everything flows along rather nicely. A superb RPG that shouldn't be missed under any circumstances.

10

VIC-20

Year released: Japan: October 1980 (69,800 Yen), US: May 1981 ($299.99), UK: September 1981 (£199.99)

Buy it now for: £10-15

Associated magazines: Vic Computing, Commodore User and C&VG

Specifications: MOS 6502A processor running at approximately 1MHz; 5K RAM as standard (3.5K available for programming) that could be expanded further via memory cartridges; Tape and disk interfaces as standard, one joystick port, one user port; Four sound channels in mono provided by the VIC chip itself: three melodic, one noise.

VIC-20

ACCORDING TO NEIL HARRIS, WHO JOINED IN EARLY 1981 AS PART OF THE AMERICAN PRODUCT LAUNCH TEAM, COMMODORE WAS A $50 MILLION PER YEAR COMPANY WITH BARELY ANY PRESENCE IN THE US. THE VIC-20 COMPUTER WAS ABOUT TO CHANGE ALL THAT. WE TAKE A LOOK AT THE MACHINE DESTINED TO LEAVE COMMODORE'S FIRST FOOTPRINT ON VIDEOGAME HISTORY

The VIC-20 was such a success in the West that it led to the creation of the Commodore 64 and then the purchase and production of the Amiga. Of course what happened to the company several years down the line is now a major part of computing history, but we're getting ahead of ourselves here. Let's go back to the start, indeed before there was any thought of the computer itself.

One of Commodore's most stunningly brilliant pieces of acquisition had been to buy MOS Technology, creators of the 6502 CPU used in many electronics for the next ten years, in 1976. Two years later, in 1978, the VIC (Video Interface Chip) was designed by Alan Charpentier for third-party sales to arcade manufacturers. Although it could produce both graphics and sound, no one was interested. Their loss. It was kept in-house, awaiting some project to come up that it could be used in.

Although the VIC-20 had many notable people working on it, the most prominent and the person to whom a lot of credit should go is Mike Tomczyk. Hired in April 1980 as Jack Tramiel's assistant, within a month of joining he had managed to visit both Germany and Japan, fired the entire marketing division and come up with the outline to the machine that would eventually turn into the VIC-20. He would become known as the 'VIC Czar'.

His first day at work would be one that defined the rest of his career, due to his attendance at the now infamous meeting just outside London. Tramiel outlined his vision, possibly inspired by Sinclair, of producing a low-cost colour computer to complement the existing PET series. Most present were in favour of continuing the high-end business line, questioning whether such a move was economically feasible. Only a few supported the idea, including Tomczyk himself, Kit Spencer (head of Commodore UK) and Tony Tokai (head of Commodore Japan).

Tramiel listened to the arguments, pounded the table and announced, "The Japanese are coming, so we will become the Japanese." He had reason to worry, however. While Commodore was number one in Europe, it lagged behind Apple and Radio Shack in the US, and Texas Instruments was gradually nudging out its calculator business. Tramiel was worried that the wave of subsidised mid-priced computers in Japan could arrive in the US and do the same to his computer business. And so, he planned a pre-emptive strike to counter this threat.

As was the case when later designing the Commodore 64, the company was not averse to examining the competition and 'borrowing' good ideas from them. Tomczyk's visit to Japan proved fruitful, the function keys of the NEC line, for example, ending up on the VIC-20 but vertically instead. By the end of the month he had typed a 30 page

INSTANT EXPERT

The working title for the VIC-20 was Vixen.
However both 'VIC' and 'Vixen' sound like swear words in German, so it was called the VC-20 (or Volkscomputer) there. Commodore had considered this title for use worldwide but decided against it.
The VIC-20 was designed and launched to stem off potential Japanese competition to Commodore's computer business, going as far as launching in Japan first (as the VIC-1001).
It was the first home computer to sell one million units worldwide, beating the Apple II by a couple of months.
Jeff Minter's career arguably took off with a little game called *Gridrunner* when published in the US, and Satoru Iwata (now head of Nintendo) converted *Galaxian* (aka *Star Battle*) in his formative years with HAL Labs.
William Shatner was hired to promote the computer just before he signed on to play TJ Hooker as his fees were quite low at the time.
During its peak Commodore was manufacturing 9,000 units per day to cope with demand.
Memory expansions were available officially in 3K, 8K and 16K sizes, and although some third-parties produced bigger than this, no game ever needed more.
Commodore released a disk drive for the VIC-20 called the 1540, but it was hardly supported and no games were written (at the time) to take advantage of the format.
Although production of the VIC-20 was halted in late 1984, software companies continued programming and publishing commercial games well into 1985.

VIC-20

OTHER VERSION

VIC-1001

The original hardware is not very different from that released in the West. Aside from the foil and Japanese symbols on the keys, the only other extra is the Japanese ROM inside. In addition to the three standard character sets, by holding Shift and the 'C=' key together on power-up it would instead switch to 'katakana' mode.

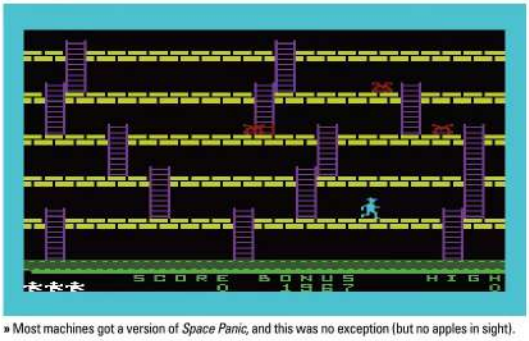
Those 'banned' games?

Much has been theorised regarding the fate of two of Commodore's titles, but in light of some recent new information, here's the most likely series of events. Commodore actually had the licence from Namco to convert *Pac-Man*, *Galaxian* and *Rally-X* to the VIC-20, these cartridges do indeed exist. However because Namco had licensed the arcades for distribution in the West to other companies, this deal solely applied to Japan.

Not one to let a minor triviality such as this get in the way of profit, Commodore released *Galaxian* as *Star Battle*, and transformed *Rally-X* into *Radar Rat Race* by way of altering the graphics. While the latter appeared to avoid the gaze of Bally Midway, the former did not and its sale ended up being restricted.

Most likely as a way of placating Bally in this situation, Commodore set up a deal to officially convert some of its other arcades including *Seawolf*, *Gorf* and *Wizard Of Wor*. More was to follow for *Pac-Man*, now called *Jelly Monsters*, as the home licence was owned by Atari and it directly took out an injunction against the game. Curiously enough this was levelled against Commodore UK rather than the parent company; either Atari felt it better to use legal means in this country or the origin of the game was European (there is a rumour it was written by Handic not HAL Labs).

Regardless of all the actions taken out against Commodore neither is that hard to find, certainly a lot less rare than many people make them out to be.



» Most machines got a version of *Space Panic*, and this was no exception (but no apples in sight).

memo to Tramiel outlining everything that needed to be done to turn the idea into an actual computer. Tramiel's sole response was to tell him to "make sure all this gets done", effectively making him head of the project.

In response, two teams at Commodore began work on producing a prototype utilising the VIC produced earlier. Within MOS Technology itself Robert Yannes, who would go on to design the SID chip, cobbled together one prototype from spare PET parts and a desktop-calculator casing. His aim was to promote it as a games machine, a concept that was carried forward to fruition.

The other prototype was constructed by Bill Seiler and John Feagans, literally from hacking bits of other machines together.

"FIFTEEN YEARS BEFORE SEGA KILLED OFF ITS OWN HARDWARE (THE SATURN), COMMODORE DID THE SAME BY RELEASING THE COMMODORE 64 IN AUGUST 1982"

The graphics half of the PET motherboard was removed and replaced with the VIC, and then a 9-pin joystick port and cartridge slot (à la Atari 2600) was added. Seiler felt the machine should be a computer, not just a games machine and insisted on having a BASIC language installed for programming. In the end, the finished prototype was a mixture of ideas from both teams.

With the machine receiving overwhelmingly positive feedback at the June 1980 CES, the PET engineers were corralled together to complete the final design in under a month. Although the cost of the computer could be kept low due to Commodore's vertical integration, only 5K of RAM could be installed per machine to keep it below Tomczyk's proposed $300 price point (and leave enough margin). While the design was being finished, the team in Japan were busy putting together the first set of software titles for launch. The machine was truly a combined effort and would not have succeeded without either. All that was left was to decide on a name.

At the beginning it didn't have one except MicroPET, probably because it was created from hacked parts. Many people dubbed it the 'Vixen' as an extension of the VIC name, Tomczyk going as far as doodling little fox logos. In the end though he decided to name it after the primary chip inside. However, 'VIC' sounded incomplete on its own; he felt it needed a number afterwards. Tomczyk doesn't know why Tony Tokai chose the '1001' number for the Japanese launch, but he chose '20' because it sounded friendly. This was a theme he was to pioneer.

The VIC-1001 debuted at the Seibu Department store in Japan in September 1980, taking over 100 orders by the end of the month and officially launching in October. While Tomczyk calculated that NEC and other Japanese companies would take a few months to digest this new offering, it would give his team time to prepare for the US launch and hopefully arrive before the competition tried to conquer America. Having worked for two years in Asia he was familiar with their business practices. It was a tactic that worked.

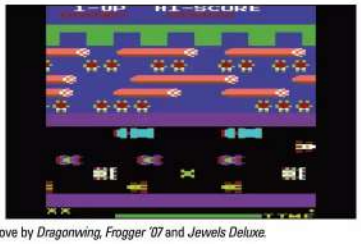
Tomczyk's prime directive to marketers and developers at Commodore was to promote the VIC-20 as a "user-friendly computer", going as far as to trademark the phrase "the friendly computer." Part of this push was to make the VIC-20 available at general retail outlets instead of specialist dealers, putting it on a competitive front with consoles. As it turned out the VIC-20 was advertised positively, comparing its features to consoles as there were no computers available in the same price bracket.

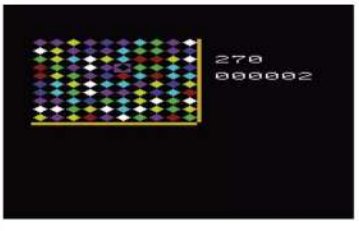
The aim was that if an 'ordinary' person bought the computer, then it should be simple enough for them to understand. Tomczyk himself was responsible for a number of features including the use of symbols and the name of each colour of the front of the keys. The team attempted to make the user manual as friendly and uncomplicated as possible for new computer users, leaving the technical nitty-gritty to the Programmer's Reference Guide.

Helping Tomczyk for the American launch were some new recruits including Andy Finkel, Neil Harris (his eventual second-in-command) and Englishman Paul Higginbottom. They were responsible for preparing manuals, fixing the Japanese software for Western launch and getting new games ready. To assist, Tomczyk hired a group of 'hackers' dubbed the 'VIC Commandos' who wrote the initial batch of 12 tape games to complement the higher-priced cartridges. Finkel later wrote a number of games for the VIC and C64, while Higginbottom became one of the main product managers overseeing the computer's success.

Come the launch of the VIC-20 in the US and Europe during 1981, everything seemingly fell into place. The computer was a huge hit with the public and garnered mainly positive reviews from the specialist press. Promotion of the VIC-20 as a 'user-friendly' computer had struck a chord, helped by the use of a familiar face (William Shatner) in prominent TV and magazine adverts. Most major retail chains had their own VIC-20 demonstration display for potential customers to try out. Commodore really was operating at full throttle to promote the computer.

People saw the VIC-20 not only as a games machine, but a device that could help in everyday life by way of the available





» Many new games are still being developed today as evidenced above by *Dragonwing*, *Frogger '07* and *Jewels Deluxe*.

COMMUNITY – THE BEST VIC-20 WEBSITES

Denial
http://sleepingelephant.com/denial/
Denial may seem a strange name (it's an anagram of the site owner's surname) but it definitely is the focal point of most VIC-20 activity today, especially the forum where details, reports and developments of everything current and past can be found.

Cosine Systems
www.cosine.org.uk
Although it's not Commodore VIC-20 specific, Cosine has been responsible for a number of high-quality demos and games in recent years, all available to download for free from its site. On top of this, the site also features a great links list and C64 downloads.

Digital Archaeology
www.digitpress.com/the_digs/vic20/
A lot of work documenting and archiving everything VIC-20 related was undertaken by Ward Shrake and his team during the Nineties. Now retired from the retro scene, this is a record of everything that is still (mostly) relevant today.

VIC-20 Tapes
www.vic20tapes.org
VIC-20 Tapes is a project to archive all software available on the system. It features all the information you would need to know such as release year and publisher as well as the type of packaging it came in. There is also a photo gallery of high-resolution images of the software boxes.

software (or by creating their own programs). Programming was no longer confined to the hobbyist or professional as computing was brought into the homes of a wider demographic. As the Spectrum was about to do in the UK, the VIC-20 became a starting point for many people who would later go on to greater things.

Assisting Commodore's profit margins was the assertion by Tomczyk that each unit captured at least another $1,000 worth of accessories and additional hardware. One of these was the VICModem, the first modem to retail at under $100 and responsible for being the first footsteps of many home owners in going online. With the creation of the Commodore Information Network to take some of the strain off telephone customer support, it is no surprise Commodore claimed this board accounted for the largest amount of traffic on CompuServe in 1982.

Indeed, 1982 saw Commodore's fortunes go from good to spectacular, the VIC-20 recording approximately 800,000 units sold and revenue of $300 million on the back of a peak production rate of 9,000 units per day. Tomczyk still expected the Japanese companies to launch their computers in the US and they did, but restricted themselves to the high-end market only. With 1983 in its infancy it became the first home computer to achieve a million sales worldwide. What could possibly halt the success of the VIC-20 now? Well, Commodore itself as it turned out.

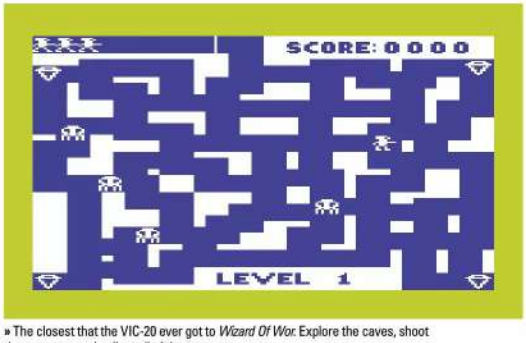
Fifteen years before Sega killed off its own hardware (the Saturn), Commodore did the same by releasing the Commodore 64 in August 1982. It had always been part of the overall scheme of resisting the potential Japanese invasion that another computer would be released, but in such a short time frame it meant the VIC-20 would die before it had been able to live. It can be argued that it was 'sacrificed' for the future of Commodore and just two years after its launch was priced at a mere $200 (in the US) or £100 (in the UK), but still targeted as an entry-level machine.

Curiously enough such a fate was not to befall the C64 once the Amiga arrived a few years after, nor did it apply to the Spectrum. Both carried on into the Nineties with commercial software releases, leaving their predecessors choking on what might have been. By the end of 1984 the last VIC-20 had rolled off the production line and in early 1985 the last computers left the shops, although software was still available. Roughly 2.5 million VIC-20s had been sold; cementing Commodore's standing and defining its future.

And that is really the computer's legacy. Not only did the C64 carry on the look and style, but most of the peripherals and accessories that worked with the VIC-20, such as joystick, datasette, disk drive and printer worked with the new computer. Upgrading was suddenly a lot less painful than it used to be, and it was all part of the design, though it did cause some speed issues.

In its wake it left a host of quality titles that hark back to the simpler arcade days of the time and evoke bygone memories when they are fired up to play. It is a pity many of them are very hard to find, so in these cases emulation is something to be grateful for. It proves that the situation then is the same as now, in that sometimes excellent games don't sell. Today there is a small but dedicated group of programmers writing new games and demos; there may not be much quantity but there is always quality about each production. They are the ones keeping the spirit alive in the same way Tom Griner and Jeff Minter did all those years ago.

The VIC-20 may have been eclipsed by its big brother C64 in the end, but it deserves to emerge from the shadow and stand on its own as a machine to be reckoned with.

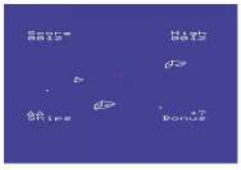


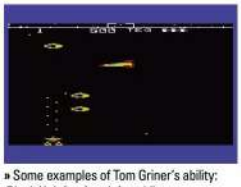
» The closest that the VIC-20 ever got to *Wizard Of Wor*. Explore the caves, shoot the monsters and collect all of the treasure.

» Japanese launch advertising for the VIC-1001.

» A range of accessories for the VIC-20.

Turning down Nintendo
In today's climate that would be a rather foolish move to make. Back then though it was an entirely different world, one in which American companies mainly ruled the waves. According to Tomczyk, shortly after the release of the VIC-20 in the West, he was able to begin negotiations with Nintendo regarding converting some of its arcade titles, including *Donkey Kong*, to home formats. Such a deal would have been a coup but as Tomczyk was about to sign, Tramiel told him to cancel the agreement.
Tomczyk believes that because of his enthusiasm in general for home formats, Nintendo decided to have a go itself. The timing would seem logical, as development on the Famicom began in August 1981 and the first wave of arcade conversions of Bally Midway titles (see 'Those 'banned' games' boxout) appeared on the VIC-20 in early 1982.
Tomczyk believes Tramiel snubbed Nintendo due to the agreement now in place with Bally.
Atari ended up with the licence to convert Nintendo's arcades to home format, although it wasn't immune to later following suit and screwing up royally on a potential deal…





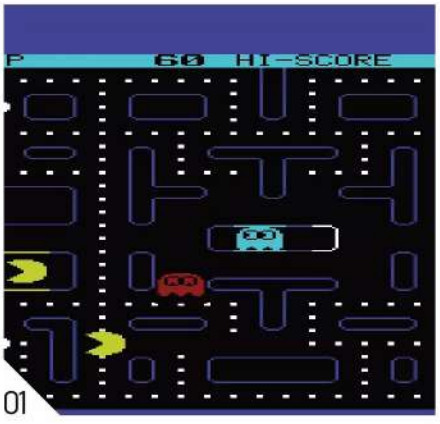
» Some examples of Tom Griner's ability: *Black Hole* (top) and *Astroblitz*.

» The six-port cartridge expander module.

VIC-20

PERFECT TEN GAMES

It may have only survived for five short years (four in the West) but Commodore's VIC-20 still had a healthy range of games available on it. So join us as we look back at ten of the machine's best games. If you're planning on entering the world of the VIC, then these are the games that you can't possibly do without



01

JELLY MONSTERS

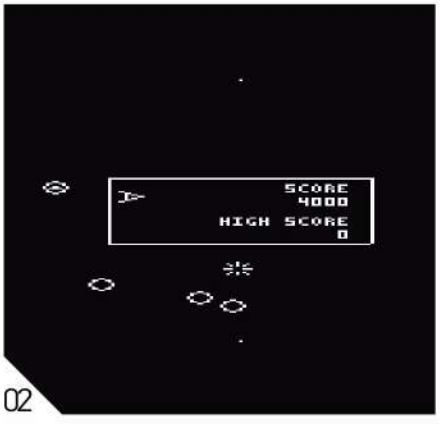
» **RELEASED:** 1981
» **PUBLISHED BY:** COMMODORE
» **CREATED BY:** HAL LABS
» **BY THE SAME DEVELOPER:** SUPER SMASH BROS

01 With hindsight it may have been more than just a breach of licence that caused Atarisoft to be so keen to have this game removed from the shelves. The other reason strikes you soon after you start playing. This is actually an incredibly playable and fun version of *Pac-Man*, far more so than the effort Atarisoft itself later released on the VIC-20. Part of the attraction is the amazingly large software sprites representing the yellow marvel and his foes, as they waltz around the maze after one another. It may not be totally accurate, but then again it was a lot closer than a certain Atari release for the 2600.

OMEGA RACE

» **RELEASED:** 1982
» **PUBLISHED BY:** COMMODORE
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** DRAGON'S DEN

02 Including another arcade conversion in the list may seem strange, for VIC-20 usually only went so far to reproduce the machines. There are always exceptions. The expertly programmed *Omega Race* by Andy Finkel is one such exception. *Omega Race* was Midway's only vector arcade game, and he managed to retain the complete look, feel, control and playability of the original. Even under the joystick the ship never feels out of control, and the fast-paced nature of the action makes it a greater draw than *Asteroids*. We'd go as far to say this edition was better than the later C64 conversion.



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PIRATE COVE ADVENTURE

» **RELEASED:** 1981
» **PUBLISHED BY:** COMMODORE
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** VOODOO CASTLE

03 While the adventures themselves were Scott (or Alexis) Adams' creations, the five licensed to Commodore were programmed by Andy Finkel, who squeezed the originals into 16K each without any loss of substance. Compression aside *Pirate Cove Adventure* is accepted as one of the best text adventures available, a two-word command assault upon the high seas to solve problems, acquire treasure and return it to the safety of your living room. Most of the puzzles are fairly logical and this will certainly present a challenge to all who attempt it.

MATRIX

» **RELEASED:** 1983
» **PUBLISHED BY:** LLAMASOFT
» **CREATED BY:** JEFF MINTER
» **BY THE SAME DEVELOPER:** *SPACE GIRAFFE*

04 Although Gridrunner started Jeff Minter along the path to worldwide notability, its sequel Matrix (aka Attack Of The Mutant Camels in the US) is the better game overall. It's harder, more varied, can often throw up a few surprises, and fixes some issues from the original (most notably the ability to 'camp' in the left-hand column to avoid the vertical zapper). The Score Panic mode of the camel waves raises the tempo, and the snitch character at the top keeps you from staying still too long. And we haven't mentioned the shot deflectors yet… one of the VIC's greatest blasters.

SWORD OF FARGOAL

» **RELEASED:** 1982
» **PUBLISHED BY:** EPYX
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** TEMPLE OF APSHAI

05 Epyx had already begun the Temple Of Apshai trilogy when Sword Of Fargoal was released. This was an arcade-like, pared-down version of the dungeon crawler. Your task was to descend through many randomly generated levels in search of the legendary sword, returning to the surface intact. With the ability only to see where you've already explored, it made the game a tense, calculating affair as you decide when to fight, when to run and when to grab all that treasure lying about. Each level was confined to the visible screen, making it feel more claustrophobic in nature. More playable than its C64 cousin.

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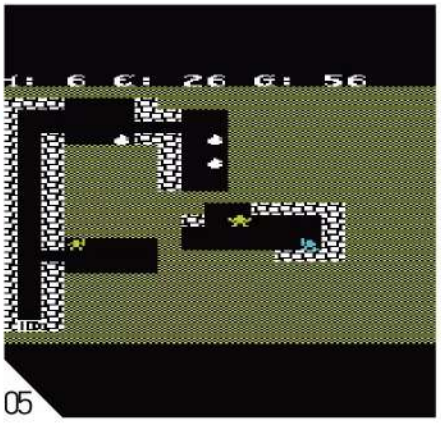

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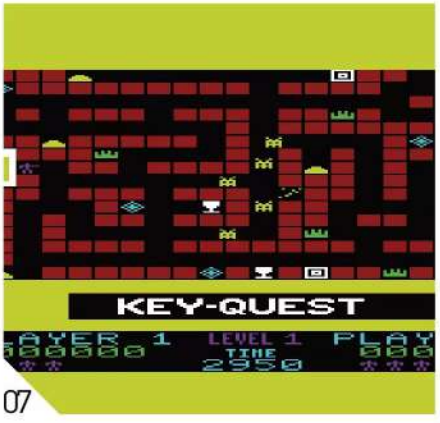

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08

DEMON ATTACK

- **RELEASED:** 1983
- **PUBLISHED BY:** IMAGIC
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** ATLANTIS

06 "You not good enough for Demon Attack!" screamed the alien in the commercial. As it transpires, however, the VIC-20 versions of Imagic's Atari 2600 games were good enough, especially this *Phoenix* clone (allegedly). Take control of the lone fighter battling through 84 waves of demon birds that have various different behaviour patterns and quite often split in half when shot. Given the liberal fire that is raining down upon you, this is no easy task after a few waves have been cleared. *Demon Attack* maintains the look and feel of the original game, and, needless to say, it retains the difficulty level as well.

KEY QUEST

- **RELEASED:** 1983
- **PUBLISHED BY:** TYMAC
- **CREATED BY:** COMPUTER APPLICATIONS INC
- **BY THE SAME DEVELOPER:** N/A

07 There's only one real downside to this game: there's only one known copy. Thankfully it's been archived and made available for those who wish to try it out in emulation. It's just a pity it wasn't more widely available at the time as it's a very good game. Much in the style of *Tutankham* you control an intrepid explorer through lots of different mazes collecting treasure, and despatching the continually multiplying enemies though you can only shoot left or right. Gaining 12 treasures in each maze opens the door to the next. Fast paced, challenging and addictive, *Key Quest* well worth checking out.

LASER ZONE

- **RELEASED:** 1983
- **PUBLISHED BY:** LLAMASOFT
- **CREATED BY:** JEFF MINTER
- **BY THE SAME DEVELOPER:** TEMPEST 2000

08 Rest assured that Llamasoft barely ever released a dud for the VIC-20, which is why another of Jeff's games features in the list. Controlling two guns at once, you must defend the outpost against the invading Zzyax aliens. While the C64 version allowed for simultaneous two-player action, the VIC-20 original is again arguably the better and more playable title. It is certainly harder by way of the smaller graphics, requiring more precise aiming especially if one of the nasties manages to land on a gun axis. At higher levels it needs total concentration, almost putting yourself "in the zone", a state quite often achieved with Llamasoft titles.

09

ASTRO NELL

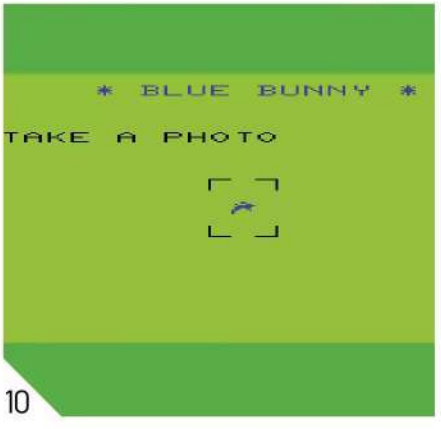
- **RELEASED:** 2004
- **PUBLISHED BY:** COSINE
- **CREATED BY:** MATT SIMMONDS
- **BY THE SAME DEVELOPER:** VICOLUMN

09 Software Project's Perils Of Willy somehow managed to squeeze in 33 screens of action using the 16K memory expansion. *Astro Nell*, on the other hand, provides the VIC-20 with a *Jet Set Willy* multi-screen experience stuffed into… well, no expanded memory whatsoever. If you can see beyond the astonishment and wonderment of how this is all possible, you also discover that it is just as tricky, nasty and polished as the game it imitates. This is old-school gaming requiring accurate jumps, paper on which to map out the rooms, and a plan to collect all of the items. So much for concessions based on age.

GAME THEORY

- **RELEASED:** 2007
- **PUBLISHED BY:** DENIAL
- **CREATED BY:** JEFF DANIELS
- **BY THE SAME DEVELOPER:** ZOMBIE YARD

10 WarioWare is a fairly new concept but it has already spawned a few imitators. But would you ever believe that one would appear on the VIC-20? While made simpler to control by requiring only the press (or presses) of the button as opposed to also moving the joystick, it doesn't mean that there is a loss of difficulty. Far from it, many of them are no pushover. Jeff Daniels has also managed to cram a surprising number of different mini-games into just 3.5K, making it a varied and non-repetitive experience. If he carries through his plan for a sequel using the 8K expansion, it should be something worth looking forward to.



10

VIC-20

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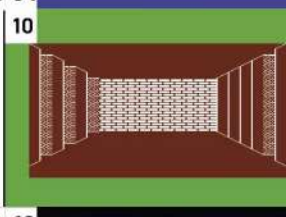
VIC-20

and the rest...

The VIC-20 certainly had its fair share of classic titles, as well as a fair few stinkers as well. Take a gander over the following two pages and see how many classics you can remember playing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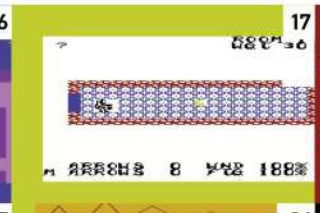
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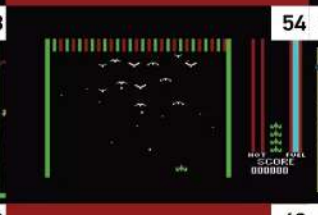
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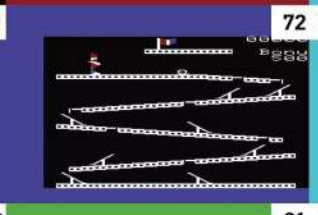
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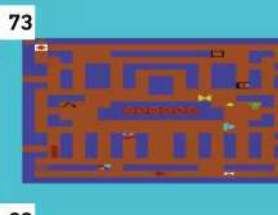

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44 GALACTIC ABDUCTORS
45 MINE MADNESS
46 STAR DEFENCE
47 RAID ON FORT KNOX
48 TOPPER
49 DIGGER
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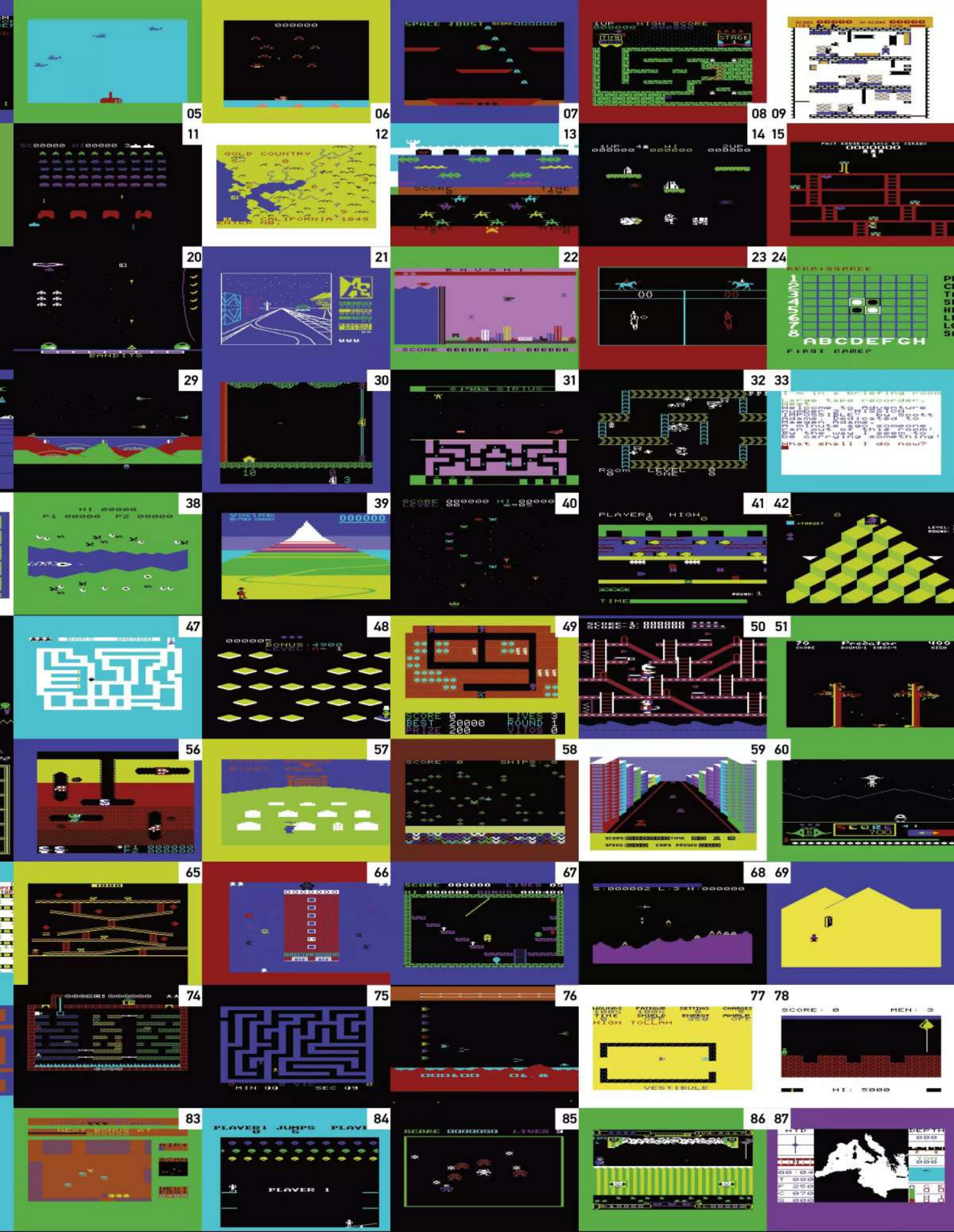
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PLAYSTATION

PlayStation

THE NAME PLAYSTATION HAS BECOME SYNONYMOUS WITH VIDEOGAMING, BUT SONY'S ROUTE INTO THE INDUSTRY WAS ANYTHING BUT STRAIGHTFORWARD. JOIN US AS WE CHART THE HISTORY OF WHAT IS ARGUABLY ONE OF THE MOST IMPORTANT CONSOLES OF ALL TIME

It's almost impossible to conceive it now, but prior to the 32-bit PlayStation's launch in 1994 there were real doubts in the media over its chances. Over 100 million hardware sales later, such pessimism seems woefully misplaced, but it's easy to forget just how many hurdles Sony had to overcome to make a success of its first piece of videogames hardware – and media scepticism was the least of those problems.

The PlayStation concept actually has its roots way back even before the 16-bit generation had hit the marketplace – 1988, to be precise. Always thinking a few steps ahead of its rivals, Nintendo was actively courting manufacturers to create some kind of expanded storage device for its Super NES console, which was in development and due to hit the market in just over a year. Sony – in conjunction with Dutch electronics giant Philips – was working on a new format called CD-ROM/XA, a new type of compact disc that allowed simultaneous access to audio, visual and computer data, making it thoroughly compatible with the medium of interactive entertainment. Because Sony was already being contracted to produce the SPC-700 sound processor for the SNES, Nintendo decided to enlist the electronics manufacturer's assistance in producing a CD-ROM add-on for its 16-bit console.

For Sony, it was a dream come true. Having been instrumental in the production of the ill-fated MSX computer format, the firm never hid its desire to become a key player in the burgeoning videogame business. Therefore, an alliance with what was unquestionably the biggest and most famous name in the industry would not only help elevate Sony's standing; it would also enable the company to set the wheels in motion for its ultimate plan: to put its consumer electronics experience to good use and produce its own videogame hardware. The industry was growing at an alarming rate thanks largely to Nintendo's hugely successful NES and Game Boy systems, and Sony was keen to obtain a foothold.

The initial agreement between the two firms was that Sony would produce a CD-ROM expansion for the existing SNES hardware and would have licence to produce games for that system. Later, it was supposed, Sony would be permitted to produce its own all-in-one machine – dubbed PlayStation – which would play both SNES carts and CD-ROM games. The format used by the SNES-based version of the PlayStation was called 'Super Disc', and Sony made sure that it held the sole international rights – in other words, it would profit handsomely from every single SNES CD-ROM title that was sold. It was a match made in heaven: Sony would instantly gain a potentially massive installed base of users overnight as the SNES was a dead cert to sell millions of units. SNES users would upgrade to the new CD-ROM add-on when they knew that Nintendo's cutting-edge games would be coming to it, and Sony would make money on each software sale. What's more, once the all-in-one PlayStation was launched, Sony would gain even more in the way of profits and become a key player in the videogame industry. The man behind this audacious scheme was Ken Kutaragi, the engineer also responsible for producing the aforementioned SNES sound chip.

However, behind the scenes Nintendo was predictably far from happy with the proposed arrangement. It was very protective of its licensing structure, which allowed it to extract massive royalties from third-party publishers. Allowing Sony leverage in this sector would only damage Nintendo's profitability; the Kyoto-based veteran reasoned that it should be making the majority of the profit on SNES CD sales, not Sony. The plan – if it came to fruition – would ultimately benefit Sony far more than Nintendo: the former would merely be using the latter as a way of getting a ready-made market share and would eventually become

SPECIFICATIONS BOX

Year released:
1994 (Japan), 1995 (US/Europe)

Original price: ¥39,800 (Japan), $299.99 (US), £299.99 (UK)

Buy it now for: £10+

Associated magazines:
PlayStation Plus, Official PlayStation Magazine, Play

Why the PlayStation was great…
Some would argue that the videogame industry in the mid-Nineties was in dire need of a boot up the backside, and the PlayStation delivered this kick. Technologically groundbreaking and supported by a wide range of third-party developers, the machine is home to countless classic titles. While some of these games have aged badly, most remain just as essential today as they were over a decade ago.

INSTANT EXPERT

- The Sony PlayStation is the first videogames console to sell over 100 million units worldwide
- *Gran Turismo* is the system's bestselling title, with 10.85 million copies sold
- The PlayStation can generate 360,000 flat-shaded polygons per second
- With only 2MB of main RAM, the PlayStation struggled with 2D titles that required lots of animation frames, while its rival the Saturn fared better thanks to the fact that it had twice the amount of memory and could be expanded still further with a separate cartridge
- Approximately 7,900 different games were produced for the PlayStation during its 11-year lifespan
- Cumulatively-speaking, PlayStation software sales stand at an astonishing 962 million units worldwide
- Each Sony Memory Card came with 128KB of storage for save game data. Higher capacity third-party cards were also available
- The console's impressive sound processor can handle 24 channels of audio
- Early versions of the machine were afflicted with skipping FMV and sound, thanks to the poorly designed nature of the CD drive. Later models rectified this issue, but early adopters still shudder at the memory of having to place their beloved consoles upside down in order to get them to work properly
- Early UK adverts for the machine featured SAPS – the Society Against PlayStation – a fictional organisation that was committed to preventing the console from ensnaring the country's youngsters

a determined rival as a result. Nintendo president Hiroshi Yamauchi was famous for being particularly ruthless in his business practices, but what happened next is one of the most infamous double-crosses in the history of the videogame industry.

It was at the 1991 Consumer Electronics Show that Nintendo dropped the bombshell. Sony went to the event full of enthusiasm and on the first day proudly announced the details of its new alliance with Nintendo, as well as news of the Super Disc format and the impending development of the SNES-compatible PlayStation. Sony had less than 24 hours to soak up the palpable level of excitement generated by this press conference before Nintendo confirmed that it was, in fact, working with Philips on the SNES CD-ROM drive. Yamauchi had gone behind Sony's back at the last minute to broker a deal with the Dutch company – a deal that was predictably skewed in Nintendo's favour – leaving Sony publicly humiliated at the very moment it had expected to usher in a new era as a serious contender in the videogaming arena. At the time, Yamauchi and the rest of Nintendo's top brass were suitably pleased with their skulduggery; such swift action had prevented Sony from taking a sizeable bite out of the company's profits. As it happened, the planned Nintendo-Philips alliance resulted in little more than a handful of risible Nintendo licences on the CD-i, and the abject failure of Sega's Mega-CD seemed to lend credence to the viewpoint that expanding existing consoles was a mistake, so while Nintendo had protected its best interests by leaving Sony at the altar in such degrading fashion, it actually gained little else of note – aside from a dogged rival.

» Although SNK's Neo-Geo system had used the same concept some years beforehand, Sony's decision to go with removable data storage for save game files was regarded by many as truly groundbreaking.

Sony had, by this point, poured a significant amount of cash into the proposed PlayStation concept. It had even moved as far as the prototype phase, with PC CD-ROM titles such as Trilobyte's *The 7th Guest* being mooted as possible launch games. Despite the tumultuous events of the 1991 CES, a deal was signed between Nintendo and Sony that would allow the latter to make its machine compatible with SNES CD-ROM titles – with the proviso that Nintendo would retain all software royalties. Although it was nothing more than a clever stalling tactic by Nintendo to keep Sony from entering the market on its own, this proposed alliance nevertheless kept the increasingly frustrated Kutaragi and his team busy. However, by 1992 it had become clear that such a union was going nowhere. Sony cut off communication with Nintendo and the company was painfully close to withdrawing from the arena for good.

Only Kutaragi's intense resolve and determination prevented the PlayStation dream from ending in 1992. During a meeting with Sony president Norio Ohga in order to decide the future of the project, Kutaragi made bold claims about the kind of machine he had been developing. He argued that the 16-bit PlayStation, with its reliance on a union with the incumbent – not to mention untrustworthy – Nintendo, was a dead end. The only option was to go it alone and create a brand new piece of hardware capable of shifting 3D graphics at a hitherto unprecedented rate. When Kutaragi's ambitious proposal was greeted with derision from the Sony president, he presented another side to his argument: could Sony's pride allow it to simply walk away when Nintendo had so blatantly abused its trust? By making

» UK gamers were treated to the amusing 'Society Against PlayStation' advertising campaign, complete with its dorky spokesman.

VARIANTS PLAYSTATION'S MANY FACES

SNES PlayStation

■ The fruit of Sony and Nintendo's ill-fated union, this machine would have played SNES carts and SNES CD-ROM software. Although it was never officially released, it formed the basis of the 32-bit machine. Legend has it that Sony still has 200 prototype units secreted within its Japanese headquarters.

Sony PlayStation

■ The groundbreaking original. This piece of hardware kick-started an era of Sony-led market dominance that would last for the best part of a decade. Early units suffered from skipping FMV and CD audio thanks to their entirely plastic CD-ROM mechanism; later versions had metal parts that fixed the issue.

Net Yaroze

■ Aimed at bedroom coders, the Net Yaroze came with development tools that allowed users to create their own games, some of which turned up on official demo discs. It also had no regional lockout, so games from any part of the world could be played on it. Naturally, it was far more expensive than the standard PlayStation.

PSone

■ Released in 2000, this revised machine was smaller than its predecessor, clocking in at a minuscule 38x193x144mm. An official LCD screen accessory could be attached to make this the first portable PlayStation, albeit without an official battery. It outsold the PS2 in its first year on sale.

COMMUNITY THE BEST PLAYSTATION RESOURCES ON THE WEB

The PlayStation Museum
playstationmuseum.com

A truly amazing site that is dedicated to preserving the history of Sony's machine. Here you will find reviews and features, as well as lots of data relating to unreleased titles or prototypes. Well worth a visit if you have a few hours to spare.

PlayStation DataCenter
psxdatacenter.com/

A must for collectors, the PlayStation DataCenter has listings for almost every game released on the format. It even has high-quality cover scans to download. A real gold mine of information for dedicated PlayStation fans.

Push Square
www.pushsquare.com

While it's not strictly aimed at the PSone, Push Square is nevertheless one of the net's leading Sony sites. It covers retro-related news items as well as the PlayStation's offspring. If you're a Sony fanboy, then you should bookmark this site for sure.

PSX-Place
www.psx-place.com

Another site that covers the entire PlayStation brand, PSX-Place is packed with news, guides, blogs and even a chat forum. It's also regularly updated with the latest and greatest Sony games, so if Sony is your passion, this is the place to be.

» [PlayStation] *PaRappa The Rapper* was one of the first music action titles and helped kick-start the recent explosion in rhythm-based gaming.

» [PlayStation] *Final Fantasy VII* was one of the PlayStation's most significant releases, not just in commercial terms but from a critical viewpoint as well. It became the first JRPG to gain truly international acceptance.

the PlayStation project a success, the company would experience the sweet taste of revenge at the expense of its one-time ally.

Kutaragi's speech hit a nerve, and early in 1994 Sony confirmed that it was entering the videogame arena with its own console, and even formed subsidiary Sony Computer Entertainment in order to oversee the new venture. Keen to differentiate this new project from its previous namesake, Sony branded it the 'PlayStation-X' – this gave rise to the abbreviation 'PSX', which is still used even today, even though the 'X' was later dropped when the console was officially launched. Early reports were impressive, with some developers confidently proclaiming that Sony's console would blow away the competition. Despite the company's wide entertainment portfolio – which included music label CBS Records and Hollywood studio Columbia Tri-Star – Sony boldly decided not to focus on the multimedia market, as its rival Philips, with its CD-i and 3DO, had done, to its great cost. Instead, the PlayStation was unashamedly proclaimed as a dedicated gaming machine, with SCE's director Akira Sato confidently stating that: "If it's not real-time, it's not a game" – a thinly veiled criticism of other CD-based consoles and their reliance on FMV titles that featured live actors but little interaction. The sheer power of the new system shocked other players in the industry; Sega of Japan president Hayao Nakayama was reportedly so furious when he read the specs for the PlayStation that he personally visited Sega's hardware division and gave them a stern talking to. His tirade would result in the Saturn, Sega's entrant in the 32-bit console war, getting an additional video processor to boost its graphical muscle, but this would make the system harder to program for – an issue that had severe ramifications in the future.

When you take into account Sony's position as one of the world's foremost electronics manufacturers, it's hardly surprisingly that the original PlayStation was a highly desirable piece of kit. Unmistakably a games console but showcasing a hint of mature design, the machine seemed to speak to those gamers who had cut their teeth on the likes of the NES, Mega Drive and SNES and were now ready to progress to an entirely different level of challenge. Everything from the two-pronged joypads to the removable Memory Card storage system seemed to drip sophistication. Sony later revealed the numerous hardware designs that had been considered before the final version was decided upon; this was the work of a company that was taking its entry into the videogames market very seriously indeed. Kutaragi – and the entire project in general – had come under fire from high-level Sony executives who argued that videogames were toys for children, and therefore, one of the PlayStation's key aims was to challenge that view. As a result, the final design for the machine was sleek and serious, mimicking the appearance of a top-end piece of audio-visual equipment rather than a games-playing device.

> **"By making it a success, Sony would experience revenge at the expense of its one-time ally"**

However, while this posturing caught the attention of gamers, some industry experts were less enthused, citing Sony's poor track record in the industry up to that point. The company's software publishing arm – Sony Imagesoft – had so far failed to generate any titles of note, pushing half-baked movie licences such as *Cliffhanger* and *Last Action Hero* onto store shelves to the complete indifference of the games-buying public. Indeed, software was one area in which Sony was at a distinct disadvantage, as Sega and Nintendo had highly talented internal development teams that traditionally produced the best software for their respective consoles. Sony

Developer Viewpoint

Robert Troughton (programmer, Destruction Derby)

■ "IT WAS LATE in 1994 that Sony – and myself – were launching into the console games business. Straight out of university, I wasn't really sure what to expect. Reflections, a game developer based in the North East, were just beginning work on a new genre of racing game: *Destruction Derby*. The premise was simple: a racing game which you win not by coming first – although that helped – but by smashing your competitors' cars to a pulp. From starting in January '95, we had only nine months to complete the project, with a team consisting of just three programmers and one artist. The PlayStation was technically leagues ahead of the competition, with amazing 3D graphics and CD-ROM technology. I can't remember whether any of us saw daylight for those nine months, but I'm not sure that any of us cared all that much. Sony loved us for how fast we were creating the game – they gave us a release date that would tie in with the PlayStation's US and European launch – the press were all over us and it was clear that the game was going to be a success. *Destruction Derby* went on to sell millions. The PlayStation sold many times more, and I've stayed in the industry ever since, still doing what I was doing back then: hacking away at code and trying to squeeze every last bit of juice out of whatever platform I'm working on – and thankful to Sony for giving me this opportunity."

Station to Station

■ RELEASED LATE IN the machine's lifespan, the PocketStation was a self-contained handheld similar in design to Sega's Dreamcast Visual Memory Unit. Its announcement caused a surprising degree of excitement, and many industry insiders confidently predicted that this miniature console was Sony's attempt to crack Nintendo's stranglehold on the handheld market. Dubbed a "personal digital assistant", it stored save game data just like a typical PlayStation Memory Card but could also play crude games on its 32x32 dot matrix LCD display, although, predictably, the quality of these titles was well below what could be experienced on Nintendo's Game Boy. An infrared connection was also included so users could exchange data without having to connect their PocketStations to their main console. Launched in 1999, it was only supported by a handful of titles and sadly never saw release outside Japan – although a release was obviously on the drawing board at some juncture as several Western games came with PocketStation functionality.

lacked this key feature, although it was at least attempting to rectify the issue by courting highly rated UK code shop Psygnosis, which would go on to publish vital launch titles such as *WipEout* and *Destruction Derby*. Still, there was an overwhelming feeling that although Sony was perceived to be doing everything right, it would ultimately fall at the final hurdle; Sega and Nintendo would continue to fight it out, just as they had done during the previous format war. 'Sony doesn't know games,' the critics cried. Thankfully, the firm managed to secure the assistance of a company that certainly did know something about the industry: Japanese arcade veteran Namco.

Pac-Man creator Namco was undergoing something of a resurgence thanks to the incredible impact made by its 3D coin-op *Ridge Racer*. A texture-mapped tour de force, the game was unquestionably a cutting-edge piece of programming and had given its parent company the ability to leapfrog persistent rival Sega in arcades. When Namco revealed that it was porting its hugely successful racer to the PlayStation, it caused quite a stir. The notion that Sony's new console could replicate an arcade title that cost thousands of pounds created astonishing levels of expectation, and this only increased when the first shots of PSX-based *Ridge Racer* were released to the public. Coded in an incredible six months, the game might not have been arcade-perfect, but it did enough to cement Sony's position as a key player, purely because it made Sega's heavily delayed in-house conversion of its *Daytona USA* coin-op look decidedly second-rate by comparison. Elsewhere, the PlayStation's visual prowess was demonstrated by exquisite third-party titles such as *Jumping Flash* and *Battle Arena Toshinden*, the former being a groundbreaking, if shallow, 3D platformer and the latter a likeable, if uninspired, one-on-one brawler. *Toshinden* couldn't hold a candle to Sega's *Virtua Fighter* port when it came to gameplay, but it was nevertheless a fundamental game in Sony's arsenal because it looked far, far better. From screenshots alone, it was clear that the PlayStation had the edge in terms of raw power.

The Japanese launch took place on 3 December 1994 – a handful of days after Sega had shifted 200,000 Saturn consoles on its first day of sale. Priced at ¥39,800 (around £250 in today's money) the PlayStation sold strongly, although the Japanese public seemed to gravitate towards Sega's console more, possibly because *Virtua Fighter*, despite the slightly unimpressive Saturn conversion, was the country's number one arcade title at the time. Both formats started out fairly evenly, but as the months rolled by Sony was able to deliver on its promises thanks to sterling releases from Namco, Konami and Capcom, while Sega's in-house projects stalled. Ironically, Sony's reliance on third-party developers proved to be in its favour. Because it needed outside assistance, the company had made great efforts to get software support, while it could be argued that Sega was less active in courting developers. Sony had made the PlayStation as accessible as possible, and it was paying dividends.

» DMA's controversial *Grand Theft Auto* started its console life as a PlayStation release and made several appearances on the machine.

The technological gulf didn't do the PlayStation any harm, either; titles such as *WipEout* looked gorgeous, with transparent textures and eye-popping flare effects. Sega's machine lacked both of these embellishments, and, thanks to its complex dual-CPU setup, required the best coders to really get the most out of it. Meanwhile, third-party studios were getting stuck in to PlayStation game production, and a string of classic titles began to emerge. *Tomb Raider* – ironically a Saturn title originally – along with *Tekken 2*, *Soul Blade*, *Ridge Racer Revolution* and *Resident Evil* all contributed to the PlayStation's wide and varied catalogue of titles.

» [PlayStation] *WipEout* came to define the PlayStation's approach to gaming and is a staple of Sony's first-party lineup.

» Norio Ohga was Sony president during the genesis of the PlayStation project. He saw off apathy within the company to ensure that Kutaragi's dream came to fruition.

» Fraternising with the enemy: Nintendo's Shigeru Miyamoto samples *Crash Bandicoot* during the 1996 E3 show.

» Sony developed several different logos before finally settling on the one we now know and love.

» Sony Europe's Phil Harrison was instrumental in attracting quality developers to the machine and would eventually rise to the top of the company.

The Western launches were equally successful, with Sony managing to undercut the retail price of Sega's Saturn in both North America and Europe. In Europe, especially, Sony displayed a masterly grasp of how to market a games machine to a more mature audience. The company knew that those gamers who had grown up with the 8-bit and 16-bit consoles were gradually reaching adulthood and would therefore require more 'grown-up' gaming experiences. While Sega and Nintendo focused on building recognisable mascots to appeal to youngsters, Sony released the PlayStation with a range of software that was unashamedly adult in tone: the aforementioned *WipEout* featured a soundtrack that showcased the talents of real recording artists, such as The Chemical Brothers and Leftfield, while visceral top-down shooter *Loaded* not only featured excessive gore and allusions to transvestism but also enrolled the assistance of grebo-rock outfit Pop Will Eat Itself. One thing was clear: Sony wasn't aiming for the *Mario* and *Sonic* audience with the PlayStation.

Sega's challenge soon began to falter, and so Nintendo became Sony's next opponent. The firm responsible for such classics as *Super Mario Bros* and *The Legend Of Zelda* had been making confident noises about its cartridge-based Ultra 64 (later Nintendo 64) console for some time, and although it wouldn't be ready until 1996, Nintendo went to great lengths to encourage gamers to hold off on buying a 32-bit machine. Sadly, the decision to stick with the expensive cartridge format would cost the firm the support of one of its most prized third-party publishers: Squaresoft. Although the highly anticipated *Final Fantasy VII* had been confirmed as an N64 release, Square eventually switched development over to Sony's machine, citing the limited storage and high unit cost of cartridges. *Final Fantasy VII* was going to be the most epic game yet conceived, and it needed as much storage space as possible. Only CD-ROM could offer this, Square argued. Nintendo's loss was, of course, Sony's massive gain; published in 1997, *Final Fantasy VII* was a worldwide smash, selling 10 million copies in the process. This success established the console as the leading platform of its generation and subsequent system exclusives such as Konami's *Metal Gear Solid* and Polyphony Digital's seminal *Gran Turismo* cemented this lofty status even further.

With both Sega and Nintendo subdued, Sony's dominance was assured. So tight was the company's grip on the marketplace that even the launch of Sega's technically superior 128-bit Dreamcast in 1999 was unable to upset the status quo. With millions of units sold and a more powerful successor – the PlayStation 2 – waiting in the wings, 2000 saw Sony release a new iteration of its 32-bit console in the form of the PSone. Smaller, sleeker and sexier, it boasted enhanced functionally that allowed it to link to mobile phones and even supported a fold-down LCD display, giving it a small degree of portability. The revision was a triumph and enabled the ageing machine to remain relevant in a marketplace that was gradually leaving it behind in technological terms.

Sony ceased manufacturing the PlayStation in 2006, giving the console an impressive production lifespan of 11 years. During that time it redefined the world of videogames, granting gamers a taste of 3D visuals and making the oft-derided hobby a cool and relevant pastime. Of course, such activity earned Sony – and, by association, its console – a fair degree of scorn also, but few would have the temerity to debate the PlayStation's incredible influence on modern interactive entertainment. Without it, the gaming landscape today would be near-unrecognisable.

PERFECT TEN GAMES

01

TOMB RAIDER

» **RELEASE:** 1996
» **PUBLISHER:** EIDOS INTERACTIVE
» **CREATOR:** CORE DESIGN
» **BY THE SAME DEVELOPER:** FIGHTING FORCE

01 Although her star has waned a little over the past few years, there's no denying that Lara Croft remains one of videogaming's most enduring icons. Her 1996 debut was actually on the Saturn, as developer Core Design had traditionally supported Sega's consoles. However, it was the PlayStation version – released shortly afterwards – that was truly responsible for firing the daring Miss Croft into the realms of global superstardom. Sequels followed as it firmly became a PlayStation series and arguably improved on the template, but the original game retains a near-legendary status.

GRAN TURISMO 2

» **RELEASE:** 1999
» **PUBLISHER:** SONY COMPUTER ENTERTAINMENT
» **CREATOR:** POLYPHONY DIGITAL
» **BY THE SAME DEVELOPER:** OMEGA BOOST

02 The first *Gran Turismo* was possibly the most technically groundbreaking release of the 32-bit era, and this sequel beefed up the already considerable experience by adding more cars, more tracks and even a rally mode. The title's visuals – already pretty mind-blowing in the original release – pushed the 32-bit hardware to the absolute limit, with Polyphony Digital's unique development software eking out every last drop of power from the PlayStation in its final years. Spanning two discs, *Gran Turismo 2* is arguably the definitive racing title of that era and still plays great today.

02

FINAL FANTASY TACTICS

» **RELEASE:** 1997
» **PUBLISHER:** SQUARE
» **CREATOR:** IN-HOUSE
» **BY THE SAME DEVELOPER:** DEW PRISM

03 With a limited release, this strategy RPG arrived around the same time as *Final Fantasy VII*, which caused some confusion when gamers discovered that they actually had very little in common. Developed by the team behind *Tactics Ogre* – Square snapped up studio Quest prior to producing the game – *Final Fantasy Tactics* showcases gorgeous visuals, breathtaking music and a surprisingly mature and complex plot. It was recently released on the PSP in a slightly enhanced form.

METAL GEAR SOLID

» **RELEASE:** 1998
» **PUBLISHER:** KONAMI
» **CREATOR:** IN-HOUSE
» **BY THE SAME DEVELOPER:** INTERNATIONAL SUPERSTAR SOCCER PRO

04 Hideo Kojima's magnum opus set a new high watermark for storytelling in videogames, as well as introducing a generation to the stealth sub-genre. Solid Snake has gone on to become a household name, starring in more technically impressive sequels on the PS2, PS3 and PS4 consoles. However, hardcore fans maintain that this instalment remains the best, thanks largely to its tight plotting, memorable characters and judicious use of the host hardware.

RESIDENT EVIL 2

» **RELEASE:** 1998
» **PUBLISHER:** CAPCOM
» **CREATOR:** IN-HOUSE
» **BY THE SAME DEVELOPER:** DINO CRISIS

05 The first title established Capcom's reputation as master of the 'survival horror' genre, but it was the second game in the series that truly confirmed the company's god-like status. Offering the ability to play the story with two different characters – one to each of the game's two discs, with differences depending on which you play first – *Resi 2* mixed relentless zombie slaughter with intriguing puzzles and some of the best visuals seen on the PlayStation up to that point. It's unsurprising that series fans hold this entry in the utmost regard.

03

04

05

The original PlayStation brought us a massive number of franchises that have become part of the gaming landscape today. Just take a look at the list below…

06

07

08

TEKKEN 3

» **RELEASE:** 1998
» **PUBLISHER:** NAMCO
» **CREATOR:** IN-HOUSE
» **BY THE SAME DEVELOPER:** SOUL BLADE

06 ***Tekken 2* had proven that Namco was more than capable of taking on Sega's illustrious Virtua Fighter, but it was the third game that dazzled the most.** Sceptics had feared that it would never appear on the 32-bit console, but Namco's expert coders managed to squeeze in every aspect of the coin-op to create a fitting pugilistic swansong for the ageing PlayStation. While the Tekken Force and Tekken Ball modes were superfluous additions to the domestic port, all of the important features were present and correct.

EINHÄNDER

» **RELEASE:** 1997
» **PUBLISHER:** SQUARE
» **CREATOR:** IN-HOUSE
» **BY THE SAME DEVELOPER:** BRAVE FENCER MUSASHI

07 Famous for being Square's only entry in the shooter genre, *Einhänder* is an incredible achievement. The team involved had no previous experience with this type of game, yet it managed to create a classic that is still talked about in hushed, reverent tones even today. Featuring a unique weapon system based on grabbing the ordnance of fallen enemies, *Einhänder*'s brilliance is made even more remarkable when you consider that Square hasn't ventured to the genre since its release.

FINAL FANTASY VII

» **RELEASE:** 1997
» **PUBLISHER:** SCE
» **CREATOR:** SQUARE
» **BY THE SAME DEVELOPER:** SAGA FRONTIER

08 Having sold over 10 million copies worldwide, *Final Fantasy VII* needs no introduction. Cited as the game that sold the Japanese RPG to the Western mainstream, this three-disc epic made the most of the PlayStation's technical capabilities to deliver hours of turn-based entertainment. It remains arguably the most popular entry in Square's evergreen franchise and has recently spawned several spin-off games and other projects, such as *Crisis Core* on the PSP and the *Advent Children* CGI movie.

09

CASTLEVANIA: SYMPHONY OF THE NIGHT

» **RELEASE:** 1997
» **PUBLISHER:** KONAMI
» **CREATOR:** IN-HOUSE
» **BY THE SAME DEVELOPER:** PROJECT OVERKILL

09 The PlayStation has a reputation for being something of a duffer when it comes to 2D titles, and to a certain extent, this is true. The console had only 2MB of RAM compared to the Saturn's 4MB, and this resulted in some lacklustre conversions. However, titles like *Symphony Of The Night* – coded with Sony's hardware in mind – were mind-blowing. Fusing 2D and 3D effects, Konami's designers created one of the most mesmerising titles of the generation. Look out for the limited edition European version, complete with art book and CD.

VAGRANT STORY

» **RELEASE:** 2000
» **PUBLISHER:** SQUARE
» **CREATOR:** IN-HOUSE
» **BY THE SAME DEVELOPER:** FRONT MISSION 2

10 One of the most ambitious role-playing games of the 32-bit era, Vagrant Story is epic in every sense of the word. Produced by the same team responsible for *Final Fantasy Tactics*, the game featured a deep and sometimes disturbing storyline, and lead character Ashley Riot has to rank as one of the most hard-edged protagonists in videogame history. *Vagrant Story* was recently re-released on Sony's PlayStation Network and can be purchased and downloaded for play on both the PlayStation 3 and PSP, and it even lives on through its shared universe with the *Final Fantasy Tactics* series and *Final Fantasy XII*.

10

AMIGA 500

Year released: 1987

Original price: £599

Buy it now for: £20

Associated magazines: Amiga World, Amiga Format, CU Amiga, Amiga Power, Amiga Action, Amiga Computing, Amiga Force, Amiga Mania, The One

Why the Amiga 500 was great... Why *wasn't* the Amiga great? During its early years, the A500 was the most desirable games machine on the planet thanks to several games that just wouldn't have been possible anywhere other than the arcades. As the years passed, its graphics became less relevant but the ease of development meant that there were hundreds of programmers pumping out classic after classic on a seemingly weekly basis.

AMIGA 500

FEW WORDS GET THE NOSTALGIA GLANDS FLOWING LIKE 'AMIGA' AND '500'. TO HEAR IT IS TO BE TRANSPORTED BACK TO A TIME WHEN NEW 2D VISUALS STILL HAD THE ABILITY TO SHOCK AND WHEN UK DEVELOPERS PRODUCED THE BEST COMPUTER GAMES IN THE ENTIRE WORLD. BUT HOW DID THE MUCH-LOVED HOME COMPUTER COME TO BE? WE REVEAL ALL...

For a home computer that's so inextricably associated with the history and fate of Commodore, it's perhaps a little surprising that the Amiga's genesis can be tracked all the way back to Commodore's biggest rival: Atari. Jay Miner, a talented designer of integrated circuits had joined Atari during the boom period of the late Seventies and was responsible for designing the display hardware in the Atari 2600. With this achievement alone, Miner's place in the videogame history books would be assured, but it was what he planned to create next that would really elevate him into the halls of fame. While at Atari, Miner had envisioned a new type of games machine that would make use of Motorola's powerful 68000 processor. Atari, which was then under the control of Warner Communications, had little interest in the 68000, however, and was much more interested in continuing to exploit the cheaper 6502 processors found in its 8-bit machines.

Disenchanted with the way Atari had been handled in the post-Bushnell organisation, Miner left the company in 1980 and, for a short time, he worked in the medical industry designing pacemakers. Two years later, however, Miner received a phone call that would rocket him back into the computer industry and change the history of gaming forever. On the end of the line was Larry Kaplan, another ex-Atari employee who had left to found Activision. Kaplan was keen to start a new videogame company and was looking for funding. Miner suggested a handful of dentist friends who were happy to invest in new projects and, before he knew it, he found himself working at a new company called Hi-Toro with Kaplan and a group of highly talented ex-Atari engineers.

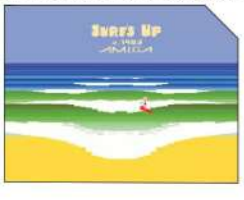
In order to keep money rolling in, Hi-Toro was split into two divisions. The first would work on peripherals for games consoles like the 2600 and Colecovision whilst a second much more secretive division would experiment with the 68000 processor to create a killer 16-bit games machine. The computer was codenamed Lorraine (after the wife of Hi-Toro's chief executive) and was designed to be as open a development system as possible so that anyone could make a game if they wanted to: the strategy had worked wonders for the hugely successful C64 so it made sense for Hi-Toro to follow suit. It was also decided that, to take strain from the processor and ensure arcade-quality graphics, Lorraine would use custom-designed chips rather than off-the-shelf components. This meant that the computer would be more expensive to produce than its nearest rivals but the end results would be far better.

1983 was something of a turning point for Hi-Toro and Lorraine. While the rest of the Western videogaming world recoiled in horror from the disastrous videogames crash, Hi-Toro cunningly rethought its organisation in order to survive the harsh consumer climate. The peripherals division, now made redundant by the failure of the console market, was abolished whilst Lorraine was redesigned to be as much a computer as it was a games machine. A keyboard, mouse and expansion options were fitted as standard whilst new staff were hired to work on a fully fledged

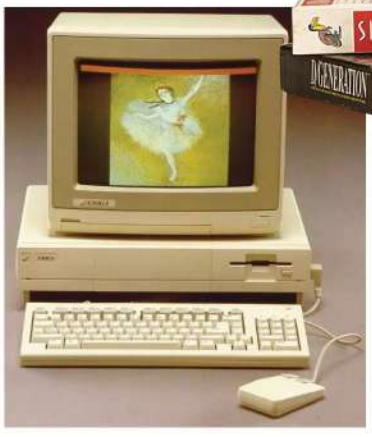
"THE COMPUTER WOULD BE MORE EXPENSIVE TO PRODUCE THAN ITS NEAREST RIVALS"

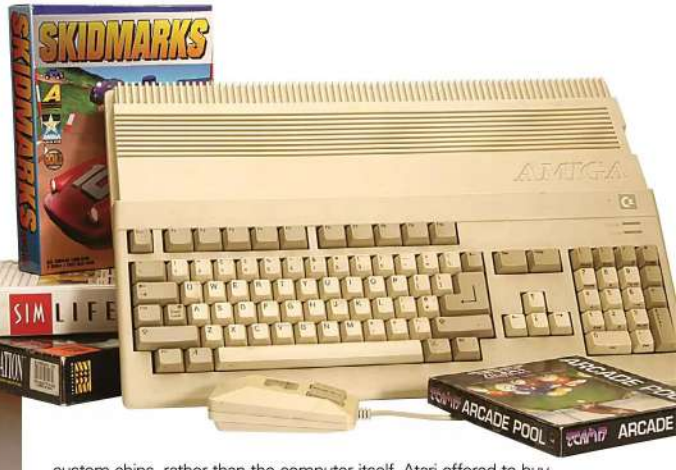
Amiga 2600

Although some may know that the Amiga company (aka Hi-Toro) started out developing for the Atari 2600, few have actually played the games, mostly because they were developed for an obscure controller and released in limited quantities. Amiga's Joyboard was an Atari 2600 controller on which the player had to stand and control its games by moving from side to side. Three games were released for the Joyboard: *Mogul Mania*, a skiing game; the unreleased surfing game, *Surf's Up*; and a Simon Says clone called *Off Your Rocker*. Technically finished in 1983, *Off Your Rocker* never actually had an official release as Amiga couldn't afford to pay for the cartridges to be labelled. The labelling company held onto the cartridges and eventually sold them to Pleasant Valley Video, years later, who then sold them on to the 2600 community with homemade labels.



AMIGA 500





» **Left:** The Amiga 600 was basically an A500+ in a smaller case. **Above:** The original Amiga 1000 complete with handy keyboard garage.

operating system called Intuition. It is also around this time that Hi-Toro was renamed as Amiga. The Toro name had already been in use by a Japanese gardening technologies firm so it was thought that a new name was needed to avoid confusion. Amiga, a Spanish word meaning 'female friend', was picked for its non-threatening nature. Finally, in September 1983, Lorraine's three main custom chips (later known as Agnus, Denise and Paula) were completed but

custom chips, rather than the computer itself, Atari offered to buy one million shares in Amiga for $3 each and even loaned the firm $500,000 to keep it afloat while the paperwork was finalised. The deal soon began to turn sour, however. Atari knew that Amiga could not afford to pay off its $500,000 loan and so delayed paperwork on the buyout and, in the meantime, reduced its offer to 98 cents per share. Things were looking grim for Amiga. Atari was gearing up to buy the company at a bargain price and didn't even plan to finish the computer that Miner had dreamed of for the past four years. Just before the Atari deal could be finalised, however, Amiga managed to find another enterprising computer company which was both willing to pay a fair price for Lorraine and help develop it into the machine that Miner and company had intended. That company was, of course, Commodore, which swooped in at the last minute to buy Amiga for $4.24 per share and even gave them $1 million to pay off their debt to Atari.

With that sticky situation behind it and rejuvenated by a $17 million investment from its new owner, Amiga set about finishing the Lorraine project, which was now to be known as the Commodore Amiga. The custom chipset was finally finished and reduced to a manageable size. Named after different people, so

» An original promo shot for the hugely successfull 'Bat Pack'.

» **Below:** The original Kickstart came on floppy disk but by the time of the A500 it was a ROM chip on the Amiga motherboard.

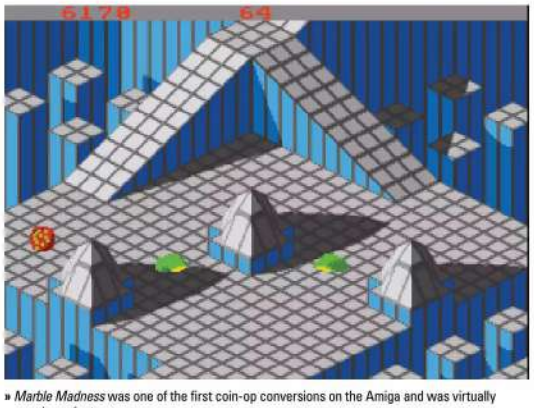
"THE MACHINE ITSELF DIDN'T LOOK THAT IMPRESSIVE, BUT IT WAS HOW THE COMPUTER LOOKED ON-SCREEN THAT REALLY WOWED THE CES ATTENDEES"

were far too big to be used inside a working home computer – each was the size of a large circuit board.

By 1984, Amiga was ready to show off its top secret project and, on 4 January, Lorraine was unveiled at the Consumer Electronics Show in Chicago. The machine itself didn't look that impressive – as it was still in the prototype stage and was made up of several circuit 'breadboards' joined together – but it was how the computer looked on-screen that really wowed the CES attendees. RJ Mical, one of the coders behind Intuition, had programmed the now legendary 'Boing Ball' demo. Boing Ball was demonstrated at the CES in an attempt to showcase Lorraine's graphical capabilities and did not disappoint. The red and white chequered ball, now an official logo for the Amiga, would bounce around the screen and alternate the direction of its rotations, all while an Intuition window functioned at 100% speed in the background.

The amazing graphical demo was enough to convince one company that Lorraine was worth investing in and, ironically enough, that company was Jay Miner's old employer, Atari. Interested in the

that competitors wouldn't realise what they were talking about in public, each of the chips performed a very specific task. Denise was the graphics co-processor and Paula controlled the sounds and external ports while Gary handled miscellaneous operations. Agnus, meanwhile, was the most important of the chips. Its main function was to regulate access to the on-board RAM but it also included two co-processors, known as Copper and Blitter, which allowed the Amiga to display the astounding graphics for which it became famous. Copper was designed to handle up to eight different sprites anywhere on screen at a single time whilst Blitter was responsible for moving bitmap images around in memory much faster than the



» *Marble Madness* was one of the first coin-op conversions on the Amiga and was virtually arcade perfect.

» An advert for the ill-conceived CDTV.

CPU would have been able to on its own. On the software side, the Amiga also saw major advancements during its final months of design. Intuition was renamed Amiga DOS (later shortened to Amiga OS) and was separated into two entities. Kickstart took care of the Amiga's basic needs, giving it just enough instructions to launch whatever program you fed into the floppy drive. Workbench, meanwhile, was the Amiga's Graphical User Interface. It was the Windows of its day and one of the first to offer a true multitasking environment, years before the PC.

On 23 July 1985, the Amiga 1000 made its first official public appearance at the Lincoln Centre in New York. In typical Commodore fashion, the latest fashionable celebrities, in this case Andy Warhol and Debbie Harry, were roped in to promote the computer. The pair were enlisted to demonstrate the Amiga's graphical capabilities in the program *Graphic Craft*, whilst *Music Craft* was shown off with a full synthesised score, written by the program's authors. The lavish launch ceremony worked and when

» *Code Name Hell Squad* was the last commercial game to be released for the A500.

» The CDTV, complete with peripherals to turn it into a fully functioning A500.

the Amiga 1000 launched in September 1985 it was an instant hit with those who could afford it. But at $1,295, the A1000 was twice the price of its nearest competitor, the Atari ST, and way out of the price range of the casual user. Those only interested in playing games weren't quite willing to pay up for an A1000 either, as aside from the stunning-looking *Defender Of The Crown* and the Commodore-published *Mind Walker*, the best games on the computer were all ports of existing Atari ST titles. Something would have to change if Commodore wanted the Amiga to dominate the home computer market in the same way as the C64 had.

In 1987 Commodore answered the prayers of those gamers with the launch of the Amiga 500. Essentially a cut-down version of the A1000, the 500 crammed a motherboard, several expansion ports and a disk drive into a slim keyboard casing. It was also compatible with household televisions and featured an upgraded version of Amiga DOS. The loss of a monitor and compact design also meant that the A500 was much cheaper to produce than the Amiga 1000 and could, crucially, be priced low enough to realistically compete with the Atari ST.

June 1987 saw the UK launch of the A500 at £599, which may seem expensive in an age where people cry and moan at the £350 PS4 Pro but was actually very reasonable for a computer of the day and saw the 500 become a much more affordable system for computer gamers of the late Eighties. *Defender Of The Crown* made its UK debut alongside the 500 and had the same effect on gamers as it had the year before in the States. The detailed graphics, the number of colours on screen, the incredible musical score and the first-person-perspective jousting were like nothing anyone had ever seen on a computer or console before and as soon as those gamers saw it running they just had to have an Amiga. 1987 was also the year that many European developers began thinking about shifting development from C64 and Spectrum to the Amiga. The affordable A500 and open architecture of the computer made it the next logical step for Europe's smaller development houses and bedroom programmers. Great UK codeshops like Psygnosis, The Bitmap Brothers, Bullfrog and Sensible Software all began working on the Amiga around 1987/88 and slowly but surely the A500 began to build up a catalogue of games that made it one of the most desirable machines available. This was great for Commodore, of course, and even better for UK gamers but did, unfortunately, cause a bit of a headache for American Amiga fans. With most of the

» Jay Miner (1932 - 1994), the father of the Amiga.

» The Cartoon Classics Amiga 500 bundle included the brilliant *Lemmings*.

Links

One of the greatest things about old Amiga software is that it can be acquired for free on the internet, or bought for less than a pound per game at auction. For further information on the Amiga's vast number of releases, Retro Gamer recommends **www.lemonamiga.com** and **hol.abime.net** – both excellent databases of Amiga games. **www.aminet.net** should help those looking for shareware games and utilities and is also well worth visiting for its historical importance, as the website has been around since 1992 and was once an essential archive for web-surfing Amiga owners. Finally, fans of Team 17 may like to visit **www.dream17.co.uk** – the only place where Team 17's Amiga back catalogue can be legally downloaded for free.

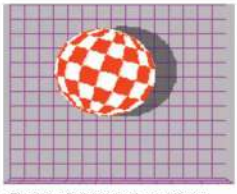
"A CUT-DOWN VERSION OF THE AMIGA 1000, THE 500 CRAMMED A MOTHERBOARD, SEVERAL EXPANSION PORTS AND A DISK DRIVE INTO A SLIM KEYBOARD CASING"

"COMMODORE HAD CREATED ONE OF THE WORLD'S FIRST MULTIMEDIA SET-TOP BOXES BUT IT SEEMED THAT NOBODY, INCLUDING COMMODORE, WAS READY FOR SUCH NEW TECHNOLOGY"

Back from the Dead

On 22 April 2007, Amiga Inc announced the development of the first mass-produced Amiga range in 13 years. Using Power PC technology, Amiga Inc, in association with ACK Software, plans to produce two new Amiga machines. One will be a compact, low-power computer, priced at $500 and the other will be a pro-user computer at $1,500. "ACK and Amiga have spent many months working on designs and working with various manufacturers to create great products with a competitive price point. We will be working with the Amiga retailers over the coming weeks to solidify launch and support plans", said Bill McEwen of Amiga Inc. For more information, log on to **www.amiga.com**

» Most of Commodore's print ads missed the point of why the Amiga 500 was so popular among users.



» The Boing Ball demo as it would have first appeared at the Consumer Electronics Show.

» The Lorraine prototype as it appeared at the Consumer Electronics Show in 1984.

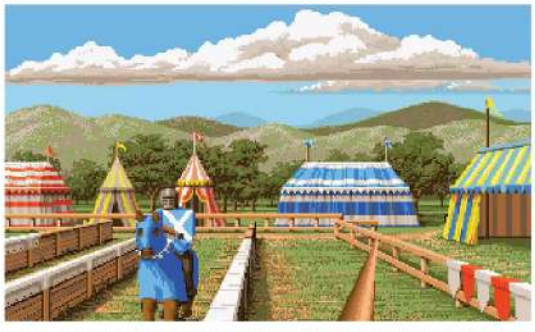
Amiga's greatest games coming out of Europe, US gamers suffered the brunt of PAL/NTSC incompatibility problems and had to resort to fitting switches into their precious computers and even buying expensive multiformat monitors.

The UK's favourable relationship with the Amiga didn't end with the software developers as Commodore UK also seemed to have a better idea of how to promote the computer than their International counterpart. Seeing that the Amiga 500, like the C64 before it, was destined for success as a games machine rather than a business machine, Commodore UK began producing packages that bundled the computer with several games at a discount price. While Commodore International had packaged the A500 with business software and digital art packages, David Pleasance at Commodore UK negotiated with Warner Bros to create the Batman Pack, which bundled an A500 along with a copy of the new *Batman* game (based on the Tim Burton film) as well as copies of *The New Zealand Story, Interceptor* and EA's incredible *Deluxe Paint 2* for just £399. In the run-up to Christmas 1989 the 'Bat Pack', as Amiga fans affectionately named it, helped raise the number of UK Amiga owners to over 2 million – a success that saw Pleasance promoted to managing director of Commodore UK.

The next few years saw several other games bundles released but it was the Bat Pack that really sealed the success of the Amiga 500 and helped sell enough machines to ensure that the Atari ST became a distant memory. But for every success that Commodore UK achieved, it seemed as though Commodore International was close behind with a disastrous plan, destined to sink the Amiga to the bottom of the sea. One of the first of these suicidal business decisions was the infamous CDTV. By stripping the keyboard and disk drive from the Amiga 500, adding a CD-ROM drive and packaging it in a sleek VCR style casing, Commodore had created one of the world's first multimedia set-top boxes but it seemed that nobody, including Commodore, was ready for such new technology. Priced at £699, the CDTV was £300 more than the average Amiga 500 and compatible with far fewer games, whilst software manufacturers seemed to have little idea of how to take advantage of the CD-ROM medium. Needless to say, the CDTV was a huge flop and was discontinued a year later. The whole project was a huge financial loss and public embarrassment for Commodore and would not be their last needless folly.

» *Shadow Of The Beast* was a UK-developed game that looked far better than anything the Americans had made.

For the time being, however, the traditional Amiga 500 continued to go from strength to strength with 1991 proving to be something of a golden year for the computer. Despite competition from the Super Nintendo and Mega Drive and a slight drop in A500 hardware sales, existing owners were rewarded with some of the greatest games in the history of the Amiga. Commodore UK launched the Amiga 500 Plus, which was virtually identical to the existing 500 but came with a full 1MB of RAM as standard. A whole new wave of quality games followed. *Another World, Full Contact, SWIV, Cruise For A Corpse, Lemmings, Moonstone, Leander, Alien Breed, Jimmy White's Whirlwind Snooker, The Secret of Monkey Island, Mega Lo Mania, Exile*... the list of defining Amiga titles to appear in 1991 goes



» For many early Amiga owners, the stunning *Defender Of The Crown* justified the purchase of the computer alone.

» Created by the late Bill Williams, *Mind Walker* is believed to be the first Amiga game ever made and was published by Commodore itself.

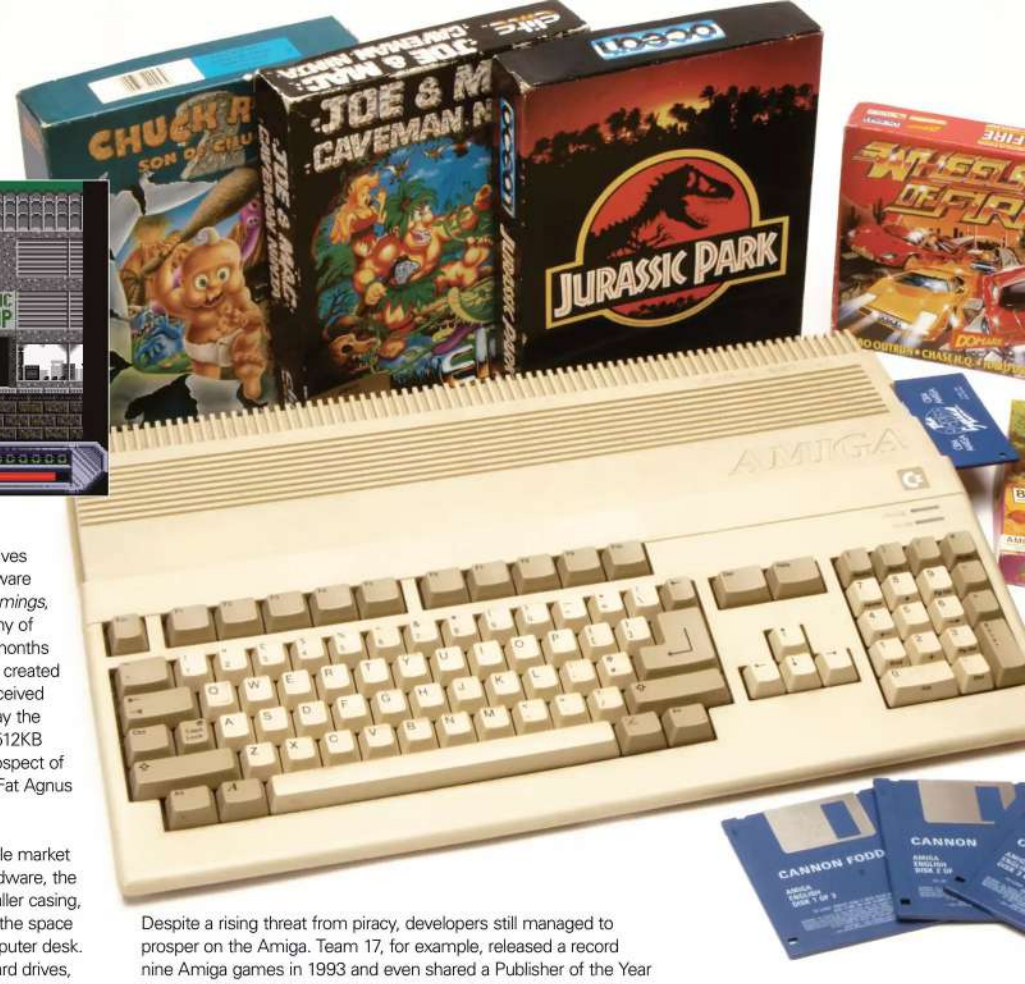
» *Metal Warrior*, one of the more recent homebrew games on the A500.

on and on. Some of these games even found themselves packaged into the Amiga's second most popular hardware bundle. Cartoon Classics cost £359 and included *Lemmings*, *The Simpsons*, *Captain Planet* and *Deluxe Paint 3*. Many of these games and others that followed in the coming months made use of the ECS chipset in the A500 Plus, which created another problem for American Amigans who never received an official release of the hardware update. Eager to play the European hits, they were forced to hardwire an extra 512KB of Chip RAM into their Amigas and even faced the prospect of having to pull out the Agnus chip and pop in the new Fat Agnus to cope with addressing the full megabyte of RAM.

The 500 Plus was soon discontinued, however, as Commodore made efforts to compete with the console market with the Amiga 600. Another variation on the 500 hardware, the A600 was launched in 1992 and featured a much smaller casing, presumably so that it could more comfortably occupy the space underneath a television set rather than hogging a computer desk. Some models of the A600 even came with internal hard drives, which reduced the need for messy disk swapping. But the 600 was ultimately seen as too little too late and was soon dropped by Commodore as its sales fizzled out.

While Commodore failed to re-ignite hardware sales, however, software sales continued to be very strong for Amiga developers.

» The impact of the Amiga continues to be felt to this day.



Despite a rising threat from piracy, developers still managed to prosper on the Amiga. Team 17, for example, released a record nine Amiga games in 1993 and even shared a Publisher of the Year award with Electronic Arts that year. Public Domain houses also flourished during this period, distributing huge volumes of indie games long before the term 'home-brew' even existed.

The coming years saw Commodore stumble one too many times and eventually implode despite the brilliance of its second-generation Amigas, the 4000, 1200 and CD32, but that didn't stop the Amiga 500 from continuing to be a critical success. Even without an official hardware presence, over 150 Amiga games were released in 1994, another 90 in 1995 and a further 86 between 1996 and 2000. Amongst those releases were even more of the Amiga's all-time greats such as *Worms*, *Theme Park* and *Beneath A Steel Sky*.

The point-and-click adventure *Code Name Hell Squad* was the final commercial game to be compatible with the Amiga 500, although it did require a CD-ROM drive. That new games were being released 13 years after the launch of A500 and six years after the fall of Commodore is testament to the dedication of the Amiga user base and the passion of its software developers. Incidentally, many of those users are still around, still using their Amigas and even producing new software. The last three years have seen a handful of decent shareware releases such as *Metal Warrior* and *Tank Wars*, while advances in the Amiga emulation scene – most notably through the only legal solution, Amiga Forever – should see more new shareware games released for years to come.

Amiga itself is still around too. After being sold from company to company over the last 13 years, Amiga Inc is now mostly a software company, although it is working to produce new hardware. It should be noted, though, that the new Amigas are Power PC -based computers that have little in common with Jay Miner's original vision, other than the promising Amiga OS 4, and will not be compatible with any old Amiga software.

Regardless of the trials and tribulations of the hardware itself, however, the Amiga's greatest legacy is the excellent catalogue of games that were available for it and the huge number of European developers who cut their teeth on the Amiga and now create some of the greatest games of today. Rockstar North, Team 17, Sony Liverpool, Lionhead, Bizarre Creations… many of these developers, and more, might not be around today were it not for the power and accessibility offered by the Amiga 500 in 1987.

» The original Workbench operating system looks garish now but was a technical marvel in 1985.

AMIGA new art

» Two limited-edition A500s produced, in Germany, to commemorate the sale of 1 million Amigas in 1989.

AMIGA 500

PERFECT TEN GAMES

Amiga's Commodore 500 was a huge success, so it should come as no surprise that a variety of superb games are available for it. Indeed, it's practically impossible to name just ten games, as for every one we put forward, three other titles were just as deserving. Still, here's what we finally decided on. To have your own say, head on over to the forums at **www.retrogamer.net/forum**

01

02

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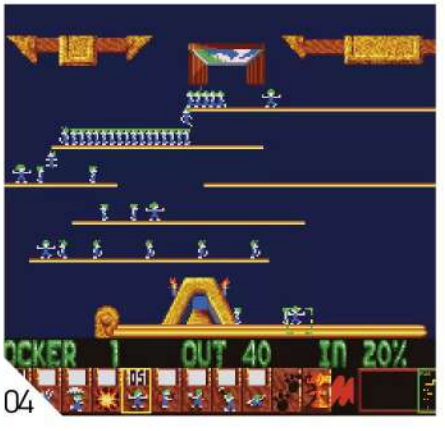

04

WORMS

- **RELEASED:** 1995
- **PUBLISHED BY:** OCEAN
- **CREATED BY:** TEAM 17
- **BY THE SAME DEVELOPER:** BODY BLOWS

01 You'd have thought that by 1995, ten years after the Amiga 1000's launch, it had seen every one of its defining games already. Well, Andy Davidson and Yorkshire-based Team 17 obviously thought there was room for one more and the world agreed with them. *Worms* was an absolute sensation and went on to sell millions of copies across countless formats, sequels and spin-offs. It's important to remember that the multiplayer strategy game began life on the Amiga, however, and was mostly a five year labour of love of just one man and a copy of Blitz Basic. And that was what was really great about the Amiga: it turned bedroom programmers into millionaires and created memorable franchises that endure for a lifetime. Can the same be said of the Xbox? We think not.

JIMMY WHITE'S WHIRLWIND SNOOKER

- **RELEASED:** 1991
- **PUBLISHED BY:** VIRGIN
- **CREATED BY:** ARCHER MACLEAN
- **BY THE SAME DEVELOPER:** DROPZONE

02 It may have been written by Retro Gamer's star columnist, but there's no favouritism here. *Jimmy White's Whirlwind Snooker* deserves to be in the Perfect Ten because it was the first game to really make snooker work on a home computer and remains a damn good sports title to this day. The 3D graphics and accurate real-time physics on each of the balls made *Whirlwind Snooker* a landmark game that pushed the hardware further than most gamers thought possible. It's arguable that the game has never been bettered, if not in its gameplay and graphics then definitely in its humour. Who can forget the cheeky faces the balls would pull if you didn't take a shot?

ANOTHER WORLD

- **RELEASED:** 1991
- **PUBLISHED BY:** VIRGIN
- **CREATED BY:** DELPHINE SOFTWARE
- **BY THE SAME DEVELOPER:** FUTURE WARS

03 *Defender Of The Crown* and *Shadow Of The Beast* may be the two games that wowed consumers enough to buy an Amiga but they were both severely lacking in the gameplay department. *Another World*, on the other hand, had both incredible graphics and utterly gripping gameplay to match. Essentially an evolution of the *Prince Of Persia* style of game, *Another World* swapped sword fighting for laser guns and added a bunch of fiendishly tricky action puzzles. The game looked stunning too; the use of vector graphics was a stroke of genius that ensured that *Another World* looked light years ahead of any other game of the time. Such a shame that Eric Chahi hasn't made another game since, although he's said to be working on an idea for a new strategy title.

LEMMINGS

- **RELEASED:** 1991
- **PUBLISHED BY:** PSYGNOSIS
- **CREATED BY:** DMA DESIGN
- **BY THE SAME DEVELOPER:** BODY HARVEST

04 What can be said about *Lemmings* that hasn't already been said many times before? It has appeared on nearly every format known to man and is surely as much a household name as *Tetris* and *Space Invaders* have grown to be. Sequels and updates continue to appear to this day and the little suicidal rodents show no sign of losing their popularity. Back in 1991, however, the release of *Lemmings* was a complete surprise. The concept was totally original and made for an instant hit. Its biggest achievements were the simple presentation and easy-to-use control system, which meant that anyone could pick up the game and start to play it. *Lemmings* had the whole family playing games together 15 years before the Nintendo Wii had even launched.

SPEEDBALL 2

- **RELEASED:** 1990
- **PUBLISHED BY:** IMAGE WORKS
- **CREATED BY:** BITMAP BROTHERS
- **BY THE SAME DEVELOPER:** XENON 2

05 The recent news that a next-gen remake of *Speedball 2* is in the works has had the Retro Gamer staff drooling uncontrollably into their coffee cups every morning since the game's announcement. Why, you may ask? Because the original Amiga game was sheer digital perfection, the likes of which had never been seen before, or since. Oozing style from the Bitmaps' trademark metallic visuals to the cries of "Ice Cream!, Ice Cream!", *Speedball 2's* greatest triumph was its imaginative rule set and peerless two-player gameplay. Many Amiga owners must remember whiling away the hours with a friend and probably do so to this day. A finer sports game it is impossible to find, in the past or present. It's so good, in fact, that we wish it was a real sport.

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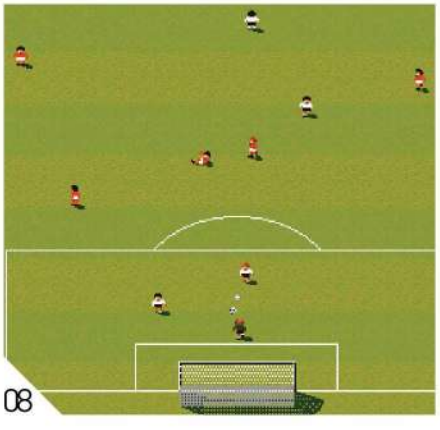
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THE SECRET OF MONKEY ISLAND

» **RELEASED:** 1991
» **PUBLISHED BY:** US GOLD
» **CREATED BY:** LUCASFILM GAMES
» **BY THE SAME DEVELOPER:** INDIANA JONES AND THE LAST CRUSADE

06 The Amiga's incredible graphical capabilities and standard mouse controller made it a perfect machine for point-and-click adventures and there were plenty of them made over the years. Picking out a favourite is an incredibly difficult task but as *The Secret Of Monkey Island* will have been the first adventure that many of us actually played on the Amiga, we have to go for that. Using an enhanced version of the SCUMM engine from *Maniac Mansion, The Secret of Monkey Island* looked great and featured plenty of brilliant puzzles. But it was the insane humour that really set it apart from the competition. The world would be a much duller place without Insult Sword fighting now wouldn't it?

ALIEN BREED

» **RELEASED:** 1991
» **PUBLISHED BY:** TEAM 17
» **CREATED BY:** TEAM 17
» **BY THE SAME DEVELOPER:** QWAK

07 With only one previous title, the beat-em-up, *Full Contact*, to its name, few expected much from ex-PD codeshop Team 17 with its second title. That is until *Alien Breed* made its stunning debut and sent jaws hurtling towards the floor, up and down the country. One of the first Amiga games to use a full 1MB of RAM, *Alien Breed* looked incredible back in the day and played even better. Basically a sci-fi version of Gauntlet with a great two-player mode, tons of cool weapons and even sampled speech, *Alien Breed* set Team 17's standard for creating top-quality arcade-style titles on the Amiga. Later sequels were technically better but none quite had the shocking impact of the original. No wonder its Special Edition spent a whopping 33 weeks in the budget charts.

SENSIBLE SOCCER

» **RELEASED:** 1992
» **PUBLISHED BY:** RENEGADE
» **CREATED BY:** SENSIBLE SOFTWARE
» **BY THE SAME DEVELOPER:** CANNON FODDER

08 Football games have been around for as long as games machines themselves and, over the years, have become much more realistic simulations of the sport as technology has improved. There's one football game that managed to be extremely playable without being a simulation, however, and that game was the mighty *Sensible Soccer*. With the emphasis placed well and truly on the fun factor, *Sensible Soccer* was, for many gamers, the greatest football game of the Nineties and remains the superior choice to this day (although just as many prefer *Sensible World of Soccer*). There are still hundreds of people out there who kept hold of their Amigas just to play *Sensible Soccer*. Everyone else will have to wait for the imminent Xbox Live Arcade version later this year.

THEME PARK

» **RELEASED:** 1994
» **PUBLISHED BY:** ELECTRONIC ARTS
» **CREATED BY:** BULLFROG
» **BY THE SAME DEVELOPER:** SYNDICATE

09 Back in the early Nineties, resource management games were defined by one title alone: Will Wright's highly influential Sim City. A truly brilliant game, *Sim City's* only problem was that constant town planning wasn't actually that much fun. The average sugar-fuelled kid needed something with a little more colour, something with fast-moving vehicles and something where little cartoon people throw up on screen. Those needs were answered by British coding legend Peter Molyneux and his ground breaking Theme Park. Designing stomach-churning rollercoasters was endless fun for the child in all of us, whilst adding extra salt to food in order to improve drinks sales appealed to the unscrupulous capitalist inside. The recent DS remake is well worth a look as well.

WINGS

» **RELEASED:** 1990
» **FREELY RELEASED BY:** CINEMAWARE
» **CREATED BY:** CINEMAWARE
» **BY THE SAME DEVELOPER:** DEFENDER OF THE CROWN

10 You couldn't ask for a more varied game than Cinemaware's *Wings*. Not only did the World War I game feature isometric shooting sections and two-dimensional bombing runs but it also had a tasty three-dimensional dog-fighting mode that was way ahead of its time. It's hard to believe that the game was made in 1990 as the 3D sections looked absolutely incredible and far in advance of anything that had appeared on consoles, PC or even the arcades at the time. Not just a graphical treat, *Wings* also had emotional impact and fully immersed you in its world. In between each level it would show pages of a diary, which told of the main character's eerily realistic wartime experiences, provoking an emotional response in the player that is all too rare in retro and modern gaming alike.

AMIGA 500

AMIGA 500

and the rest...

Commodore's 16-bit triumph features so many games that we'd need a whole mag just to feature them. Console yourself with the following shots

01 DOJO DAN
02 POWERDROME
03 WEIRD DREAMS
04 ALIEN BREED
05 DISPOSABLE HERO
06 MAGIC POCKETS
07 CARRIER COMMAND
08 RAMPART
09 LAST NINJA REMIX
10 SIM CITY
11 WINGS
12 DRAGON'S LAIR
13 MIDWINTER
14 SHADOW OF THE BEAST
15 TOTAL ECLIPSE
16 AGONY
17 GAUNTLET II
18 GRID RUNNER
19 MEGA LO MANIA
20 VIRUS
21 ROBOCOP
22 AIRBORNE RANGER
23 EXILE
24 CRYSTAL KINGDOM DIZZY
25 MOONSTONE: A HARD DAY'S KNIGHT
26 SKWEEK
27 PINBALL FANTASIES
28 WING COMMANDER
29 THE IMMORTAL
30 BUGGY BOY
31 FIRST SAMURAI
32 KATAKIS
33 OPERATION WOLF
34 STARDUST
35 FIRE AND ICE
36 ANOTHER WORLD
37 JETSTRIKE
38 NEBULUS
39 UNREAL
40 RAINBOW ISLANDS
41 COOL CROC TWINS
42 GUNSHIP 2000
43 BATTLE CHESS
44 F29 RETALIATOR
45 THEME PARK
46 QWAK
47 EYE OF THE BEHOLDER
48 HEROQUEST
49 PIPE DREAM
50 LEMMINGS
51 WALKER
52 RISE OF THE ROBOTS
53 ZOOL
54 BARBARIAN
55 GOBLIINS
56 IT CAME FROM THE DESERT
57 PINBALL DREAMS
58 CANNON FODDER
59 R-TYPE
60 STAR WARS
61 HEIMDALL
62 FALCON
63 LIONHEART
64 POPULOUS
65 SPACE ACE
66 SPEEDBALL 2: BRUTAL DELUXE
67 CRUISE FOR A CORPSE
68 OBLITERATOR
69 SENSIBLE WORLD OF SOCCER
70 CADAVER
71 JURASSIC PARK
72 THE NEW ZEALAND STORY
73 PAC-MANIA
74 SPINDIZZY WORLDS
75 WIZBALL
76 FORMULA ONE GRAND PRIX
77 PGA EUROPEAN TOUR
78 IK+
79 LOTUS ESPRIT TURBO CHALLENGE
80 TETRIS
81 GREAT GIANA SISTERS
82 RAMPAGE
83 XENON 2: MEGABLAST
84 LEGEND OF KYRANDIA
85 RODLAND
86 THE SECRET OF MONKEY ISLAND
87 ARCHER MACLEAN'S POOL

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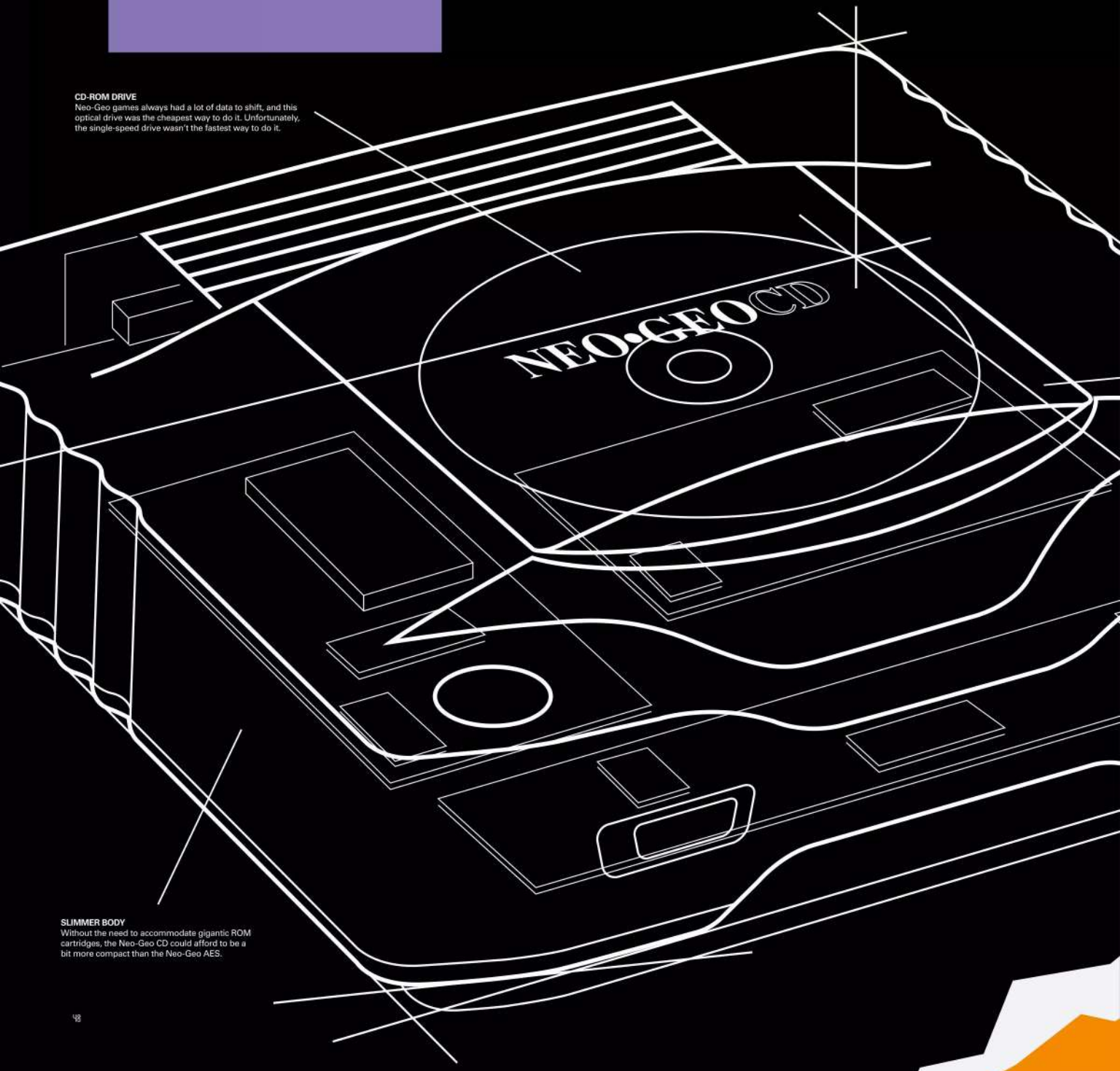
NEO-GEO CD

NEO·

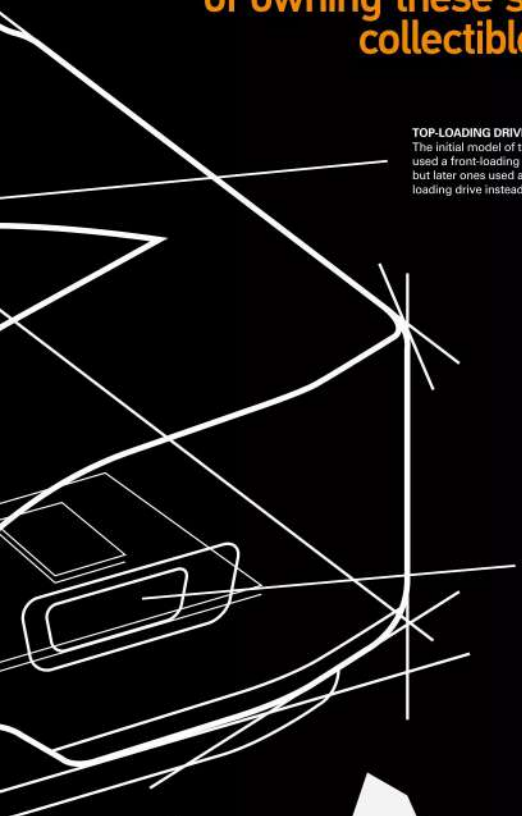


CD-ROM DRIVE
Neo-Geo games always had a lot of data to shift, and this optical drive was the cheapest way to do it. Unfortunately, the single-speed drive wasn't the fastest way to do it.

SLIMMER BODY
Without the need to accommodate gigantic ROM cartridges, the Neo-Geo CD could afford to be a bit more compact than the Neo-Geo AES.

·GEO CD

The Neo-Geo CD range was a brave attempt to bring arcade-fidelity videogames to the home gamer at an affordable price. We look at the pros and cons of owning these scarce and collectible systems



TOP-LOADING DRIVE
The initial model of the Neo-Geo CD used a front-loading drive mechanism, but later ones used a cost-reduced top-loading drive instead.

The launch of SNK's Neo-Geo AES console in late 1990 marked a pivotal moment in the history of home gaming systems. For the very first time it was possible to play the exact versions – not just underpowered clones – of arcade titles from the comfort of your living room. With its elegantly progressive marketing slogan, 'The Future Is Now', the Neo-Geo coin-op hardware (the MVS) and its home counterpart hosted some of the most exciting games of the early Nineties, from the *King Of Fighters* and *Samurai Shodown* franchises, to the acclaimed *Metal Slug* series and visually breathtaking shooters like *Pulstar* and *Blazing Star*. The so-called '24-bit' system certainly lived up to its name – the Neo-Geo moniker being Latin for 'New Ground'. It all added up to the potential stuff of dreams for arcade fans.

The technical specifications of the device were remarkable for its time. Its cutting-edge 2D architecture allowed 380 large, multi-coloured sprites on screen at once, and an advanced palette of 4096 colours out of a possible 65536. The super-fast graphic processing speed benefited from a 68000 CPU coupled with a Zilog Z80 and various custom video chips, and the onboard Yamaha sound processor provided 15-channel sound, with impressive digital speech-synthesis. With their huge cartridges and enormous memory capacities, Neo-Geo games just looked and sounded more impressive than anything on competing home systems, particularly with their massive sprites, vibrant backdrops, animation, and notable dynamic graphical zooming effects. The monolithic black slab of a console dwarfed other gaming systems of the day both in size and capability. But with great power came a very hefty ▶

THE ARCADE FEEL
Using the same control ports as the Neo-Geo AES, the Neo-Geo CD was compatible with existing high-quality arcade sticks as well as its own dedicated control pad.

» [Neo-Geo CD] The rather-rare *Neo Turf Masters* is a surprisingly deep golf game.

» [Neo-Geo CD] Humongous bosses and camels are staples of *Metal Slug 2*

DEFINING GAMES

The blockbuster titles that made the Neo-Geo CD shine

IRONCLAD 1996

■ This exclusive Neo-Geo CD shoot-'em-up was produced by Saurus, creator of the excellent *Shock Troopers* series, and was unfortunately only released in Japan. It is certainly one of the most exciting games of its type on the system, with some exquisite steampunk visuals and nods to classic shoot-'em-ups, such as *Darius* and *R-Type*.

METAL SLUG 1996

■ For some, this is the definitive *Metal Slug* game in terms of action, pacing and epic boss fights, and the Neo-Geo CD version features a unique bonus in Combat School, a remixed survival mode for battle-hardened players to test their run-and-gun skills. With its reasonably short loading times, it's arguably superior to the AES version.

CROSSED SWORDS II 1995

■ A graphically superior sequel to the fantasy Neo-Geo arcade hack-'em-up, this game was designed specifically for the CD-based console. The unusual simulated 3D view through your player's 'ghost' is reminiscent of *Super Punch Out*, while the more RPG-like structure of the game and multiple magical abilities add to its appeal.

NEO DRIFT OUT 1996

■ Another arcade release that made it to the Neo-Geo CD but not to the AES, Visco's racing title is pretty much a top-down take on *Sega Rally*. The sensation of speed and feel of sliding around corners is particularly enjoyable, and there are three familiar cars to drive, namely the Mitsubishi Lancer, Subaru Impreza and Toyota Celica.

PUZZLE BOBBLE 1995

■ Taito's classic puzzle game never actually made it to the AES, despite being distributed internationally for the Neo-Geo arcade system. With its cute bubble blowing dinosaurs and colourful graphics, it's one of those games that remains as appealing to play today as it was when it first appeared, particularly with two players.

» [Neo-Geo CD] This warplane-themed shooter series was renamed *Aero Fighters* outside of Japan.

> "One setback of the system was the fact that the single-speed CD drive was noticeably slow"

» [Neo-Geo CD] One of the last Neo-Geo CD releases, *The Last Blade 2* was a fantastic fighting game – too bad it was hampered by lengthy load times.

▶ price tag. At around £500 for the unit and £150-200 for each cartridge-based game, the Neo-Geo AES was simply way too expensive for the average punter to consider as a viable alternative to the SNES and Mega Drive or home computers such as the Amiga.

In an effort to bring down manufacturing costs and make games more affordable for consumers SNK released a CD-based version of the Neo-Geo, unveiled to the world at the Tokyo Toy Show in June 1994. When the new console, christened simply the 'Neo-Geo CD', launched shortly afterwards in Japan it sold out of its entire production run of 25,000 units in a single day. North America had to wait until October 1995 to get hold of its version of the unit, although Europeans got it slightly earlier in December 1994. The new console cost $399 in the US, and £399 in the UK, which was admittedly not a massive price drop from the AES. But because compact discs were relatively cheap compared to the cost of ROM chip production, SNK could sell its games for a fraction of the price of the expensive cartridge versions. SNK's new console came with a satisfyingly chunky four-button gamepad, smaller than the arcade-style stick of the AES system, but featuring a unique thumbstick that echoed the analogue controllers of later-generation consoles.

The initial Japanese Neo-Geo CD model was rather bulky and featured a hi-fi-style, front-loading CD tray, which suffered from reported reliability problems. The second model, and by far the easiest to come across nowadays, sported a more traditional top-loading CD tray similar to the Sega Saturn or PlayStation. This was the version produced for the international market. Both systems were able to play audio CDs and there was no region-lock on the system, meaning no restrictions on importing and playing games. However, one setback of the system was the fact that the single-speed CD drive was noticeably slow, causing frustrating loading times, particularly on fighting games, where gamers would be waiting between rounds and every time they switched characters.

Even some non-fighting games – the shoot-'em-up *Pulstar*, for instance – suffered from annoying intermissions between levels of up to a minute or so, a definite step backwards from the instant loading times of cartridge-based systems.

For those blessed with a little patience, though, the upside of the Neo-Geo CD was the chance to finally dip into an exclusive quality games library at a much reduced price point. For fighting game fans, the chance

to own arcade-perfect versions of *Fatal Fury*, *Art Of Fighting* and *Samurai Shodown*, with their stunning sprite-scaling effects, was gaming heaven. The system was also prized for its terrific range of shoot-'em-ups, including *Last Resort*, *Aero Fighters* and *Viewpoint* as well as sports games like *Baseball Stars*, *Super Sidekicks* and the brilliant Frisbee-themed *Windjammers*. For software producers, it offered the exciting chance to develop for both the arcade and home market simultaneously, some adding bonus features to the CD versions of their titles. For example, *Metal Slug* and *Metal Slug 2* had a brand-new combat mode not seen in the AES versions, and *Neo Turf Masters* contained a completely new golf course on the CD format. Developers were also able to add enhanced CD-audio, with the likes of *Samurai Shodown II* and its remixed soundtrack which was far superior to the AES and arcade releases.

As undoubtedly great as its software library was, from the mid Nineties, SNK realised that the Neo-Geo CD needed to battle the next generation of consoles from Sega and Sony. While the system was technically streets ahead of the older SNES and Mega Drive consoles as far as running arcade-perfect 2D beat-'em-ups and shooters, it was unequipped to compete with the 3D capabilities of the Saturn and PlayStation, and games like *Tomb Raider* and *WipEout*. The North American branch of SNK wanted to address the problem of loading times, admitting it was one of the most criticised aspects of the system, and feeling it could bring customers back to the Neo-Geo brand. A third iteration of the Neo-Geo CD, the CDZ, directly addressed this technical flaw. Released in 1996 in Japan, the new version of the console was a much more compact design, and featured superior CD caching which significantly improved disc access speeds. Indeed, the CDZ was pretty much essential to play later, more memory intensive games like *The Last Blade*, *King Of Fighters '99* and *Samurai Shodown IV* due to otherwise unbearably long loading times. Unfortunately, the unit was prone to overheating if left on for ▶

DECISIONS, DECISIONS

We break down the different iterations of the Neo-Geo CD hardware

NEO-GEO CD Front Loader

■ The original Japanese model has front-loading CD tray which was unusual in a games console of its time and more reminiscent of audio CD players.

■ This was the first Neo-Geo CD model to go on sale, and the largest of the three console types.

■ All Neo-Geo CD console models have RCA A/V and S-Video output and two joystick ports compatible with both gamepads and arcade sticks.

NEO-GEO CD Top Loader

■ This was the only Neo-Geo CD console model to be sold outside Japan, and therefore the easiest to find in Europe or North America.

■ Like all Neo-Geo CD models, it has no region lock, making playing imported game titles easy.

■ The design of the top-loading CD drive is similar to the Sega Saturn, and it's probably the most reliable of the three console types.

NEO-GEO CDZ

■ The improved caching of the CD drive of the CDZ models allows for faster loading times, around half that of the older models.

■ The unit is much more compact than the other versions, about two thirds of the size overall.

■ Unfortunately the CDZ is prone to overheating if left switched on for extended periods of over three hours at a time.

NAMED AND SHAMED

The powerhouse console also had its share of chaff...

BURNING FIGHT 1994

■ SNK's reply to the success of Capcom's arcade brawler *Final Fight* was to attempt to pretty much directly copy it, and the result was this uninspiring and very average clone. There's not much point owning it, even if you are a fan of the original – we'd point you in the direction of the much more enjoyable *Sengoku* series instead.

RIDING HERO 1995

■ This owes an obvious debt to Sega's *Super Hang-On* arcade motorbike racer, but graphically it owes more to the much older *Pole Position*, which isn't really a good thing. And, like *Pole Position*, it's very hard to play for more than a few seconds without crashing off the road into a billboard or colliding with other drivers.

AGGRESSORS OF DARK KOMBAT 1994

■ A 'Marmite' fighting game if ever there was one, *Aggressors Of Dark Kombat* has built up a bit of a cult following over the years. But unless you are a hardcore fan of the genre we'd give it a miss due the fact that its grapple orientated system is so hard to time and master against CPU opponents as to make it relentlessly difficult.

THE LAST BLADE 1999

■ One of the most beautiful 2D fighting games ever, but the Neo-Geo CD version of *The Last Blade* was the victim of the cutting of multiple animation frames to reduce loading times. On the older systems you could be waiting around for up to four minutes, although its sequel, *Last Blade 2*, is marginally better in this aspect.

THE KING OF FIGHTERS '99 1999

■ Likewise, this otherwise excellent entry in SNK's premier beat-'em-up saga is rendered highly frustrating by the amount of loading it does between rounds, with frequent pauses to load in the backgrounds and post-match updates. It's not quite as teeth-gnashing on the CDZ, but still not really a good way to experience this title.

» [Neo-Geo CD] *Pulstar* is probably the most technically impressive shoot-'em-up on the system.

> "Despite possible overheating problems the CDZ is the most sought-after model, due to its reduced loading times"

long periods of time, due to the reduced ventilation of the smaller casing and the larger amount of heat generated by the new CD drive. This could thankfully be countered by not using it for more than around three hours at a time, and making sure to operate it in a cool, well-ventilated environment. But perhaps for this reason, the CDZ version was never actually released in North America or Europe.

Despite the flaws of the Neo-Geo CD console variants, they remain, like the other Neo-Geo home systems, popular collector items. And, for anyone with an appreciation of arcade history or hand-drawn sprites and animation, they are still one of the best examples of dedicated 2D gaming machines. The European version of the console is subject to a smaller screen and black borders because of operating at 50 MHz, but an imported system from Japan or the US with a step-down AC adapter will get around this. Interestingly, the region setting of the console determines the region setting of games meaning that even the Japanese console can be set-up to play games in English. This works for all but the untranslated titles like *Samurai Shodown RPG*. The 'Front Loader' Japanese and 'Top Loader' international versions are the least expensive to get hold of, give or take shipping costs. Despite the overheating problems the CDZ is the most sought-after model, due to its reduced loading times. Because of this, it is around twice as pricey as the two older versions. Expect to pay around £75-100 for the non-CDZ versions and about £200-250 for the CDZ. Be aware, though, that second-hand systems can suffer from the wear of the CD lens and motor, and also the gamepads, usually in relation to the thumbstick controller, depending on how much use they have seen. Because of the rarity of Neo-Geo hardware these problems can be difficult to repair or rectify. All models offer excellent video output, for which an RGB to SCART lead is recommended at around £12.

The attractively packaged games can be picked up cheaply, with titles exchanging hands from the £15-25 mark for the more common titles such as *Top Hunter*, *Windjammers* and many of the fighting games. However, prized games like *Metal Slug* and *Twinkle Star Sprites* will be more expensive, and rarities like *Ironclad* will set you back in excess of £150. Compared to the prices of the AES equivalents, though, you won't be looking at £500 for *Ninja Commando* or £1,500 for *Metal Slug*, a rather over-the-top barrier for collectors of these cartridge versions. As such, you can build up a decent Neo-Geo CD library without too much of a hit to the wallet if you hunt around, especially if you are brave enough to rummage about on Japanese auction sites, where bundles can often be snagged for a few pounds.

» [Neo-Geo CD] The unique competitive shooter *Twinkle Star Sprites* is a wonderful two-player game.

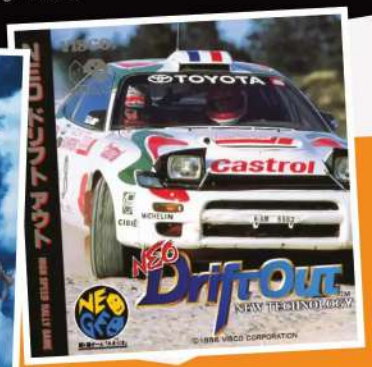
» [Neo-Geo CD] *Street Hoop* is one of many accomplished sports games for the Neo-Geo CD.

» [Neo-Geo CD] *Viewpoint*, with its stunning *Zaxxon*-like isometric graphics.

The final batch of Neo-Geo CD games, including *The Last Blade 2* and *King Of Fighters '99*, were released in early 1999 by SNK. As a company, SNK went into liquidation in 2000, and its assets were bought by a Korean company, Playmore. The final SNK-produced game, *Sengoku 3*, was released by the newly formed SNK Playmore in October 2001, but never made it to the Neo-Geo CD, along with other anticipated titles like *Blazing Star*, *Shock Troopers*, *Garou: Mark Of The Wolves* and *Metal Slug 3* (only the first two *Metal Slug* games made it to the Neo-Geo CD). From this point onwards the reformed SNK Playmore concentrated on limited arcade and home AES publishing as well as supporting other manufacturer's hardware, like Sega's Dreamcast and the PlayStation 2 for games like *The Last Blade 2* and *Metal Slug 3* and *Metal Slug 4*. In total, during its lifetime, the Neo-Geo CD had a total of 98 titles released in Japan by SNK, with 75 released for the international market. However, the machine continued to be supported by homebrew and specialist developers such as the German NG: Dev:Team, which released the shoot-'em-up *Last Hope* for the platform in 2007.

So are the Neo-Geo CD systems worth your time and investment? The answer depends on whether you are enough of a fan of SNK's catalogue of titles and appreciate the knowledge you are playing them on the original hardware. For most non-fighting games on the system loading times aren't much of an issue, and no more noticeable than later CD-based systems. For instance, the shooter *Last Resort* has an initial load of just over 30 seconds after which it never loads again. Earlier fighting games, such as *Samurai Shodown II*, *Fatal Fury 2* and *King Of Fighters '94*, have intermittent loading between rounds but are still quite playable. If you want to play later beat-'em-ups such as *The Last Blade*, *Samurai Shodown 4*, or *King Of Fighters '99*, though, you will probably find yourself rather frustrated, even with a faster CDZ model. The hardware's CD drive is simply not quick enough to deal with the massive data transfer required by these games. One alternative to the CD systems without breaking the bank on a Neo-Geo AES would be a consolised arcade MVS system, which would probably cost around the same as a CDZ model. The MVS cartridges for Neo-Geo games are a fraction of the price of the home AES versions and many decent titles can be picked up from about £15-20 upwards. An alternative way to play some of these great Neo-Geo titles is to pick up ports for consoles like the Sega Saturn, Dreamcast or PlayStation. The PlayStation also has a port of *Metal Slug X*, a remixed version of *Metal Slug 2*. The PS2 has some excellent SNK anthologies including *Samurai Shodown*, *Metal Slug* and *Last Blade*. Perhaps the best place to start would be *SNK Arcade Classics Volume 1*. SNK Playmore also released a number of classic Neo-Geo games for the Virtual Console, including the rare and otherwise hugely expensive *Ironclad*. For many collectors though nothing beats owning an original Neo-Geo system, and as they'll tell you, good things come to those that wait. ✱

» [Neo-Geo CD] *Last Resort* – a very fine shooter with a look very similar to the *R-Type* games.

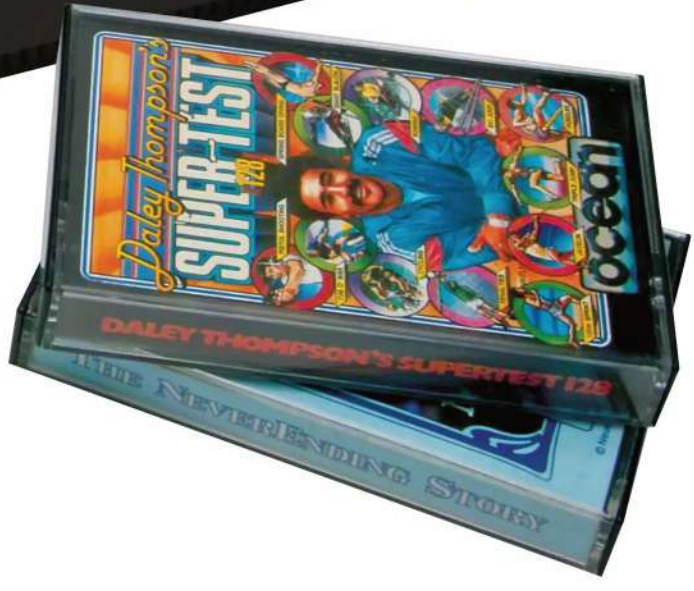


NEO·GEO CD

SPECTRUM 128

"THE MARKET WANTED MORE MEMORY AND BETTER SOUND IN ORDER TO HELP PRODUCE MORE ENGAGING GAMES, AND THAT WAS DONE IN THE MOST MECHANICAL WAY POSSIBLE"

RUPERT GOODWINS, SINCLAIR RESEARCH



Year released: September 1985 (Spain), February 1986 (UK)

Buy it now for: £50 (£179 at launch)

Specifications: Processor: Zilog Z80A CPU; Speed: 3.54MHz; RAM: 128K; ROM: 32K; Display: 256x192 pixels, 32x24 characters; Colours: 15 in total (eight basic plus seven 'bright' colours); Sound: AY-3-8912 chip outputting three channel sound

Why the Spectrum 128 was great... It was the machine that the Spectrum Plus should have been. Extra memory allowed for bigger and better games, and the AY chip made everything sound sweeter. It also holds the distinction of being the last 'proper' Speccy before Amstrad muscled in.

THE ZX80, ZX81 AND ZX SPECTRUM FOLLOWED IN QUICK SUCCESSION, BUT SINCLAIR BUMBLED AND STUMBLED WHEN IT CAME TO EXTENDING THE ZX LINE, EVENTUALLY RELEASING THE SPECTRUM 128 IN 1985 AMID FEARS THAT THE COMPANY WAS FACING FINANCIAL RUIN. WE LOOK BACK AT THE COMPUTER THAT NEARLY NEVER HAPPENED

Back in the mid-Eighties, alliteration-loving journos used the term Super Spectrum to describe every new computer that Sinclair Research was rumoured to be working on. First to receive the honour was the LC-3 (Low Cost Colour Computer), but this was more of a colour ZX81 than anything else. Then there was Pandora, a portable Spectrum with a flat-screen monitor, and Loki, a Z80-based computer that would go toe to toe with the ST and Amiga. There was also a project predating Loki that was being developed with the codename 'Super Spectrum'. Sadly, none of these computers made the perilous leap from development to production and very few firm details exist.

"Sinclair was a rather secretive place," says Rupert Goodwins, who worked at the company as a programmer and helped develop the Spectrum 128's system software. "There were always projects on the go or in suspended animation, and ideas from abandoned projects often got revived in some form. Most of this stuff, if it existed at all, only got as far as breadboard prototypes. The decision to develop it properly, which would have meant serious money on integrated circuit design and system software, was never taken."

Money was not something Sinclair had a great deal of at the time. The QL, Sir Clive's great obelisk of hope, failed to wow the business machine market when launched in early 1984. It was an expensive failure and one that would have an impact on all future projects. Even so, punters and the press were surprised when, after all the speculation involving secretive new products, Sinclair could only muster up the Spectrum Plus. The Plus was just a standard Spectrum stuffed into a new case with a moving QL-style keyboard replacing the old rubber membrane. The hardware was unchanged, making it more Spectrum 1.1 then 2.0. The upgrade wasn't even launched as such – it just crept on to disgruntled retailers' shelves in October 1984.

This play-it-safe approach had nothing to do with the QL shambles, however. In fact, the focus shifted back to the Spectrum *because* the QL failed. "Clive always felt that games computers were a bit beneath the dignity of the company," reveals Rupert. "The Spectrum was seen as yesterday's computer and he wanted to stride ahead with wafer-scale integration, business machines and AI. There was a lot of snobbery involved. But when the QL misfired, more attention was paid to working out what had been a success and seeing how it could be best developed. Bright, shiny, noisy and cheap suddenly became desirable attributes."

"But then we hit other problems with Sinclair – a near-inability to get products out, lots of infighting and, in the latter days, all the money going away. I mean, we couldn't even get any memory expansion packs or disk interfaces out of the door – stuff that one-man bands were pushing out of sheds all the way from Penzance to Prestonpans."

For a while, it looked like a proper Spectrum successor might never happen, but then the solution – to the lack of money problem, at least – arrived from overseas. The Spectrum was performing really well in Spain, where it was distributed by Madrid-based firm Investronica. Charles Cotton, Sinclair's sales and marketing director, claimed that the machine accounted for more than half of all home computers sold in the territory at the time. While the Spanish market was smaller and less developed than the UK's, the results were good enough to convince Investronica to invest in the development of a new machine. With fresh impetus and much-needed funds in place, Sinclair and Investronica worked to develop an upgrade that exploited the Spectrum's popularity as a gaming machine.

"The market wanted more memory and better sound in order to help produce more engaging games," says Rupert. "And that was done in the most mechanical way possible… take a standard sound chip, gate in some more RAM, futz around with the system software and get it out as soon as possible." The result of all this futzing around was the Spectrum 128.

The 128 may have been a quick and dirty upgrade but it did address most of the Spectrum's shortcomings. Perhaps the biggest criticism levelled at the original machine was its weedy sound capabilities. Rather than a dedicated sound chip, the Spectrum featured a small CPU-controlled speaker capable of playing a single note at a time. It was known as the 'beeper' because that's effectively what it did. For the 128, Sinclair replaced the beeper with the three-channel AY-3-8912 chip. Unlike the beeper, sound could be channelled through a TV without additional hardware, so you could finally pump up the volume, and sound output no longer impacted on the CPU, allowing for proper in-game music.

Next on the additions list was more memory. When the Spectrum launched in 1982, 48K was seen as a generous amount, but as we now know, you can never ever have enough RAM. When it came to the amount of extra memory, 128K was a given really as Commodore, Amstrad and Atari had already released 128K versions of their 8-bit machines.

The third main addition was 128 BASIC. The updated version introduced a number of new commands (to control the AY chip, for example), but the most obvious change was the overdue retirement of the one-touch keyword entry system. This idiosyncratic input method, where whole commands were entered by pressing one or more keys, was ditched in favour of a standard entry system where you typed out each command in full. An improved full-screen edit function was also added, enabling users to easily amend BASIC listings using the cursor keys.

Updating BASIC proved to be a rather big headache for all those involved. It was absolutely vital that the Spectrum 128 would run the huge library of existing Spectrum software, so the team had to ensure that it was fully compatible with the 48K ROM. They eventually did this by including the complete 48K ROM and allowing the user to switch from 128 to 48 mode on start-up, thereby circumventing the new 128 features that might cause compatibility problems with older software. This workable solution was complicated by the fact that the original BASIC source was broken. "The biggest shock I had when I started work was that the Spectrum source code within Sinclair was in an unusable state,"

INSTANT EXPERT

The 128 was codenamed 'Derby' during development.
The CPU in the 128 runs slightly faster than in the original 48K machine – 3.54MHz as opposed to 3.5MHz.
The extended 128K memory doubles as a RAM disk, allowing for rapid data access.
The AY-3-8912 sound chip had already been used in the Amstrad CPC, Oric-1 and Atari ST, making it a sensible off-the-shelf choice for the 128.
The Spanish 128 didn't show a system menu on start-up – users had to type 'spectrum' at the BASIC prompt to enter 48K mode – but it did feature a built-in text editor that was dropped from the UK release.
Despite claims that the 128 would support all existing Spectrum software, some games would not run, even in 48K mode, due to subtle changes made to the 48K ROM. *Elite* was one high-profile title that was incompatible with the 128.
Fans affectionately refer to the 128 as the 'toast rack' due to the distinctive heat sink bolted to the right side of the machine.
With the 128, Sinclair reluctantly targeted the gaming market. At the UK launch, chief executive Bill Jeffrey said, "We have focused the 128 on the entertainment sector. Recent market research has shown us that entertainment is easily the most common use of computers in the home."
The 128 was compatible with first-party add-ons including the Interface 1, Interface 2 and the ZX Printer.
Ben Cheese, who designed the 128's hardware, used to play saxophone with Eighties Brit funksters Shakatak.

» Rick Dickinson, the award-winning designer of every Sinclair computer going right back to the ZX80.

» Rupert Goodwins, currently technology editor at ZDNet UK, joined Sinclair in early 1985 and helped convert the 48K ROM to the Spectrum 128. However, he's most proud of coding the little Spectrum stripes on the on-screen menus.

OTHER VERSIONS WHEN ONE MACHINE ISN'T ENOUGH

THE +2 AND +3

Having swallowed up Sinclair Research in 1986, Amstrad spat out a couple of new computers based around the 128 hardware. The +2 was the Spectrum equivalent of a CPC464 with an integrated tape drive, while the +3 added a built-in three-inch floppy drive just like the CPC664. Both machines benefited from a decent keyboard and twin joystick ports. The +2 was later replaced by the +2A, a cost-reduced model that Amstrad continued to manufacture until the early Nineties.

» The Spectrum +2. We can't tell you what Rick Dickinson said about this Amstrad-designed machine for fear of upsetting younger readers.

» Sir Clive of Cambridge, undoubtedly the number one hero of the British people… ever!

» Talk about a song and dance… The AY chip that generated the exciting new Speccy sound.

FULL SPEC SPECCY

When it came to developing the 128, it's a shame Sinclair didn't take a closer look at what Timex had done with the TS2068, the official Spectrum upgrade released in the US in late 1983. The TS2068 was essentially a 48K Spectrum with some neat extras designed to appeal to the American market. It boasted an AY chip (the same one that ended up in the 128), a ROM cartridge slot, twin joystick ports and additional video modes allowing for higher screen and colour resolutions. However, changes to the way the ROM was organised meant that the TS2068 wasn't compatible with more than 90 per cent of commercial Spectrum software. Maybe if the 128 had spent more time on the drawing board, Sinclair could've worked out a way of incorporating the TS2068's advanced features (particularly the extra video modes), while ensuring that compatibility with existing Spectrum software wasn't affected.

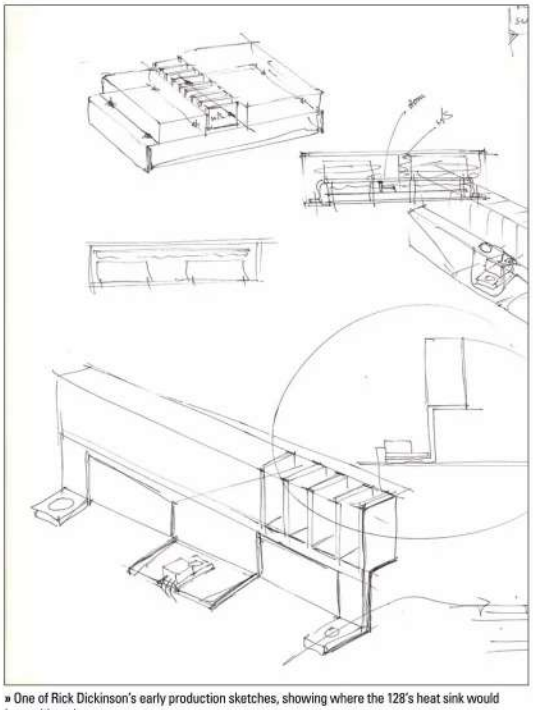
» In many ways the TS2068 was a more progressive machine that the Spectrum 128.

says Rupert. "So we – or mostly me, if I remember correctly – had to practically retype it all in from Melbourne House's Complete Spectrum ROM Disassembly."

Much less time was spent on the 128's external appearance. To minimise costs and speed up production, the casing and keyboard was handed down wholesale from the Plus. Rick Dickinson, who designed all of Sinclair's computers, admits that the 128 didn't require much effort on his part, and it certainly didn't sit well with his somewhat romantic notions of product design and innovation. "From my standpoint it was churn it out and get on with it," he tells us. "The sad thing is that we never designed a second-generation Spectrum where you could see a very clear migration from the original. With the Plus and 128 there was no similarity whatsoever with the Spectrum. They were just like the QL, which became our corporate style, and that was all down to the changes in the decision making. In the earlier days the decisions were pretty much down to Clive, and then the company grew and there were marketing managers and stock managers and all the rest of it, and the decision making was done from a different perspective."

In this new corporate climate, Rick did at least manage to make his mark in one very noticeable way. Unlike the Plus, the 128 had a whacking great external heat sink running down its right-hand side. Due to the extra components that required power, the 128 generated more heat than the Plus, so Rick took the unusual step of adding cooling fins to the outside of the casing. "The 128 got very hot, and the main heat source was a single component, which was the voltage regulator, so I made a decision to move the voltage regulator off to one side and attach it directly to a heat sink, which was then bolted to the outside of the case. The heat sink was die cast in zinc, which conducts heat well enough, especially when you make it as big as I did! It certainly made it distinctive."

> "THERE WAS NOTHING PARTICULARLY UNIQUE ABOUT THE 128. IT WAS A QUICK JOB, BUT IT WAS A GOOD PRODUCT. GOOD AND RIGHT FOR THE TIME" RICK DICKINSON, SINCLAIR RESEARCH



» One of Rick Dickinson's early production sketches, showing where the 128's heat sink would be positioned.

The 128 also received a couple of additional ports: video RGB-out for connecting the computer directly to a monitor, and RS232/MIDI-out for connecting various peripherals. An obvious omission was any kind of joystick interface, which was surprising seeing as the 128 was designed with gaming in mind.

Built-in joystick ports would have been welcome, but surely the most desirable addition on any fan's wish list would have been an end to attribute clash. Due to shortcomings in the Spectrum's display capabilities, only two colours could appear in any 8x8 pixel square, so colours would bleed all over the place. Programmers learnt to stem the flow as best they could, and Speccy owners grew used to the sight of it, but it was surely something that should have been fixed in the 128, even if it meant sacrificing resolution.

The 128 was launched in Spain in September 1985, with it making a belated appearance in the UK in February 1986. The delay was mainly due to an existing deal with Dixons. The high-street chain had paid £10m to secure a huge number of Plus machines and understandably didn't want Sinclair to release a shiny new model prior to the profitable Christmas period.

As the UK launch approached, computer journalists took a closer look at the 128 and the feedback was generally favourable. In *Your Spectrum*, Max Phillips wondered how much people would be

» The 128 system menu. According to Rupert Goodwins, on the 128 development machines the copyright message at the bottom read, "Hip hep snap the boogie". So now you know…

COMMUNITY THE BEST SPECTRUM WEBSITES

World of Spectrum
www.worldofspectrum.org
This site really doesn't need any introduction, so we're not even going to bother. If you haven't visited World of Spectrum before then go there straight away. Do not pass go, do not collect £200 and so on. With information on just about every single piece of Spectrum software that has ever been released, it's quite possibly the finest retro resource on the internet.

Planet Sinclair
www.nvg.ntnu.no/sinclair/
If you're really interested in Sinclair hardware then this site is definitely the right site for you and well worth delving into. The complete range of ZX computers is covered here, of course, and there is also tons and tons of information about Sinclair's other gadgets and gizmos, from the company's earliest radio right up until the infamous C5 electric buggy thingy.

Crash Online
www.crashonline.org.uk/
Crash was a magazine covering the Spectrum, published from 1984 to 1992. This website has an archive of the contents in each issue, with links to some of the features and high-quality scans of the magazine's covers as well as comic strips and included posters. Some issues have links to download the magazine and view on a Kindle device and Kindle apps on some devices.

Retrospec
http://retrospec.sgn.net
If retro game remakes make you grin from ear to ear then you have to stop by Retrospec and sample some of the best 8-bit updates available on the internet. Speccy fanatics are advised to seek out the brilliant remakes of *Atic Atac, Head Over Heels, Manic Miner, Halls Of The Things* and *Zub*. There are tons more remakes too, and all of them are really worth downloading.

prepared to pay for the new machine. "The price is crucial," he wrote. "At around £120 it's a goer, but if Sinclair does the dastardly and comes in at £160 then there will be fewer takers." The 128 launched in the UK at a double-dastardly £179.

Still, at the UK launch event, Sir Clive boasted that interest in the machine was unprecedented with orders worth £8m already secured. And of course there were all those full-fat double cream 128K games to lap up… "Software quite unlike anything seen before," claimed Sir Clive. It was deeply ironic then that the launch titles turned out to be *exactly* what we'd seen before, because they were all updated versions of existing 48K games with a few added extras, such as additional content or new AY music. Even the two Ocean games bundled with the 128 – *Daley Thompson's Super-Test* and *The Neverending Story* – were tarted-up 48K titles.

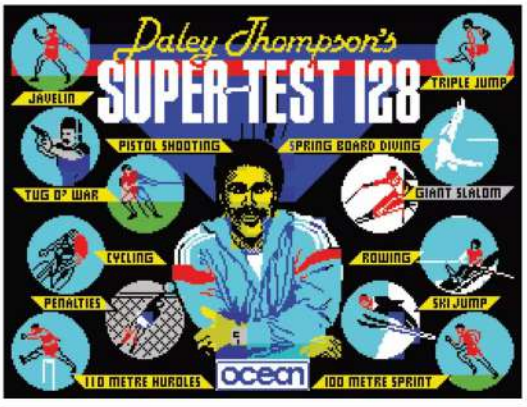
It seemed that publishers were unwilling to exclude the huge 48K user base by releasing 128K-only software, although as the 128 market grew it became the norm for new games to cater for both 48K and 128K owners.

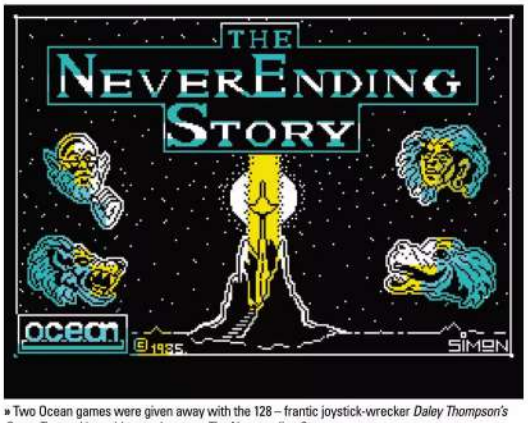
Perhaps the 128's biggest claim to fame is that it enjoyed the shortest shelf life of any Sinclair computer. In April 1986, following months of speculation about Sinclair's financial woes, Amstrad acquired Sinclair Research from Sir Clive in a deal worth £5m. Amstrad moved quickly to align the Spectrum with its CPC range and in September it ushered in the +2, leaving the axe to fall on the 128 after just six months on sale.

Looking back, Rupert views the 128 as a missed opportunity. "The general feeling within Sinclair was that we needed something new and wonderful to get back into the swing of things, and the 128 wasn't that interesting," he says. "If we'd have been serious about it we would have put in a floppy interface, more video modes, and cost reduced it a lot more. It suffered from a lack of imagination."

"There was nothing very unique about the 128," agrees Rick. "It was a quick job, but it was a good product and right for the time."

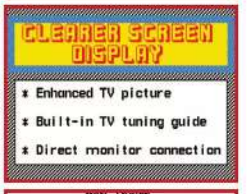
It was the right product for Amstrad, who placed the 128's hardware and system software at the core of both its +2 and +3 machines. Ultimately, it may not have been the elusive Super Spectrum, but development of the 128 was key in breathing new life into the Speccy and prolonging its commercial life into the Nineties.





» Two Ocean games were given away with the 128 – frantic joystick-wrecker *Daley Thompson's Super-Test* and languid text adventure *The Neverending Story*.

THERE'S A WORLD OF DIFFERENCE
IN THE
ZX SPECTRUM 128
* 128K memory for bigger, better games.
* Improved features.
* Easier than ever to use.



» Sinclair produced a demo for retailers to play in their shops. It showcased the 128's capabilities and some of it was even true.

» In Spain it came with a numeric keypad. It's believed that the keypad was never officially released in the UK.

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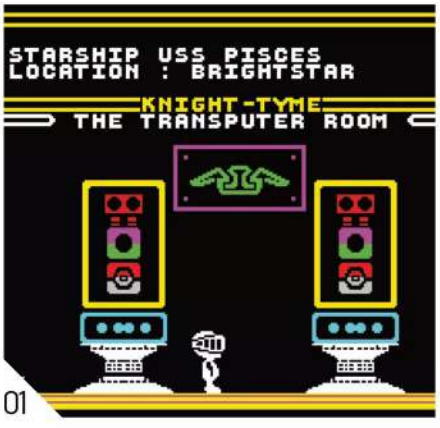
PERFECT TEN GAMES

Pure and simple – ten games that showcased the Spectrum 128's capabilities. For argument's sake, the titles that very nearly made the top ten are Fairlight 2 (The Edge), The Pawn (Magnetic Scrolls), Chase HQ (Ocean), Pang (Ocean), Little Computer People (Activision), HeroQuest (Gremlin) and Thundercats (Elite)



01

KNIGHT TYME

» **RELEASED:** 1986
» **PUBLISHED BY:** MASTERTRONIC
» **CREATED BY:** DAVID JONES
» **BY THE SAME DEVELOPER:** FINDERS KEEPERS

01 If you'd just blown the best part of £200 on a 128 then it must have been soothing to see *Knight Tyme* available for just three English pounds. That's right, the first game to be developed specially for the 128 (rather than a lukewarm 48K update) was a Mastertronic budget title that showed full-price publishers how it should be done. Following directly on from *Spellbound*, the third entry in the *Magic Knight* series shifted the action forward in time to a faraway galaxy filled with weird and wonderful characters and head-flexing puzzles. It was witty and clever and, in all honesty, grossly underpriced. A great in-game tune sealed the deal.

AMAUROTE

» **RELEASED:** 1987
» **PUBLISHED BY:** MASTERTRONIC
» **CREATED BY:** BINARY DESIGN
» **BY THE SAME DEVELOPER:** ZUB

02 Along with the *Magic Knight* games, *Amaurote* was another budget title that was better than many full-price releases. Playing like an updated version of *Ant Attack*, you were dropped into a city swarming with oversized insects. But rather than running in the opposite direction, your job was to locate and destroy the insect queen and her workers in all 25 sectors. The presentation on the 128K version was superb, with a quirky in-game tune by David Whittaker and a animated 'drop' sequence playing as you move into each sector. Along with *Zub*, *180* and *Feud*, it was another slice of budget brilliance from the super Pickford Bros.

02

STARGLIDER

» **RELEASED:** 1986
» **PUBLISHED BY:** RAINBIRD
» **CREATED BY:** REALTIME GAMES
» **BY THE SAME DEVELOPER:** CARRIER COMMAND

03 Vector graphics games always fared well on the Spectrum so there were high hopes for its version of Jez San's 16-bit classic. Realtime Games handled the coding and the end result surpassed all expectations. The 48K version was great, although there was little to do beyond racking up a high score and progressing to the next level. The enhanced 128K version was the complete package with a number of special missions and touches like in-game speech, a rear-view scanner, and slo-mo replays when you destroy Starglider One. If only other publishers had lavished as much attention on their 128K games.

RENEGADE

» **RELEASED:** 1987
» **PUBLISHED BY:** IMAGINE SOFTWARE
» **CREATED BY:** MIKE LAMB
» **BY THE SAME DEVELOPER:** ROBOCOP

04 Was there a better version of this arcade game on any home computer? Doubtful, as *Renegade* on the Speccy was arguably better than the coin-op. It was more fun on the 128, as it featured a number of elements that had to be cut from the 48K version. There was music throughout (a different tune for each level) and an extra area to brawl in before the final encounter with the boss. More subtle was the useful shoulder-throw move that was unique to the 128 version. The sequel, *Target Renegade*, was also superb, although from a 128 perspective it didn't add any additional content beyond AY music.

TAI PAN

» **RELEASED:** 1987
» **PUBLISHED BY:** OCEAN
» **CREATED BY:** SENTIENT SOFTWARE
» **BY THE SAME DEVELOPER:** WEC LE MANS

05 In the Eighties, Ocean liked to exploit pretty much everything and the 128 was no exception. It was responsible for the two titles bundled with the machine and was quick to create 128K versions of all its new games. Later on it was also the first major publisher to drop support for the 48K altogether. *Tai Pan* was the first game it developed from the ground up for the 128 (a 48K version was also available but it was a stripped down multi-load affair). Based on the book by James Clavell, this heady mix of arcade, adventure and strategy elements upon China's high seas was the first 128K mega game.

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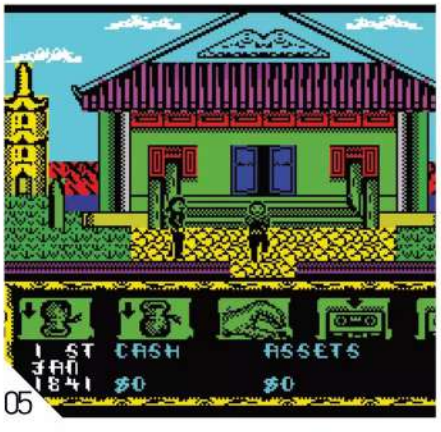

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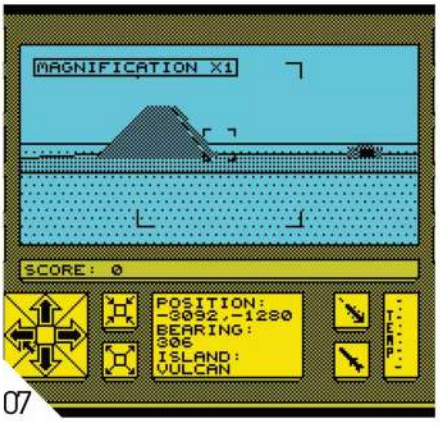

07

08

WHERE TIME STOOD STILL

- **RELEASED:** 1988
- **PUBLISHED BY:** OCEAN
- **CREATED BY:** DENTON DESIGN
- **BY THE SAME DEVELOPER:** THE GREAT ESCAPE

06 This was what 128 owners had been waiting for – a sprawling arcade adventure that was too big to cram into 48K. Inspired by Seventies movie *The Land That Time Forgot*, it time-warped you to a hostile world where everything wanted to eat you and your party. There were obstacles to overcome and puzzles to solve, but the emphasis was on exploring. Some set pieces, such as the swamp crossing, must rank among the Speccy's finest moments. With *WTSS*, Denton Designs built on the foundations laid in *The Great Escape* and created a gripping adventure.

CARRIER COMMAND

- **RELEASED:** 1989
- **PUBLISHED BY:** RAINBIRD
- **CREATED BY:** REALTIME GAMES
- **BY THE SAME DEVELOPER:** BATTLE COMMAND

07 With *Starglider*, Realtime showed it could take a complex 16-bit game and port it to the Speccy, particularly when there was 128K to play with. It delivered the goods again with this brilliant conversion that re-created the multi-faceted gameplay of the original. The graphics engine was particularly impressive, especially when you consider that the C64 version dropped the 3D viewpoint completely, in favour of a top-down 2D approach. This conversion spent two years in the making but it was well worth the wait. The sequel, *Battle Command*, is also recommended.

MIDNIGHT RESISTANCE

- **RELEASED:** 1990
- **PUBLISHED BY:** OCEAN
- **CREATED BY:** SPECIAL FX
- **BY THE SAME DEVELOPER:** CABAL

08 Colour clash was the bane of every Spectrum programmer, and in later years many sidestepped the problem by opting for a dull monochrome display. Thank God then for games like *Midnight Resistance*. Special effects went mad, splashing Speccy colour all over the place. This glorious graphical style really suited the run-'n'-gun format. The game would run on the 48K, but the only way to play it was on a 128 with all nine levels loading in one go and the excellent AY soundtrack complementing the on-screen carnage. The only thing missing was co-op play.

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09

PRICE OF MAGIK

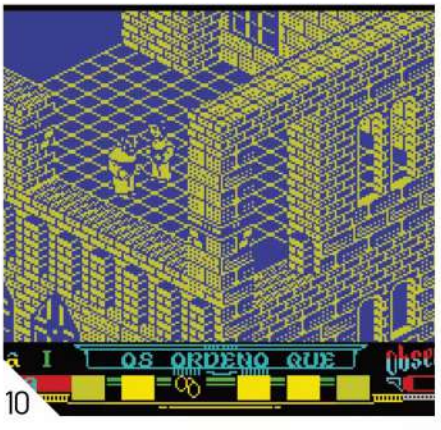
- **RELEASED:** 1986
- **PUBLISHED BY:** LEVEL 9
- **CREATED BY:** LEVEL 9
- **BY THE SAME DEVELOPER:** THE WORM IN PARADISE

09 Having spent a number of years cramming text adventures into the Spectrum's 48K RAM, Level 9 made the jump to the bigger memory Speccy without any hesitation. *Price Of Magik* – the third and final part of the *Time And Magik* trilogy – was the first to offer an enhanced 128K version. It featured the same location graphics as the 48K version, but the text descriptions were longer and loaded with extra detail, making for a much more involving adventure. Overall, *Price Of Magik* was one of the best games to come from developer Level 9, with a cracking Lovecraft-inspired storyline, tough but fair puzzles, non-linear progression and an intelligent parser. For us it just pipped *The Pawn*.

LA ABADIA DEL CRIMEN

- **RELEASED:** 1988
- **PUBLISHED BY:** OPERA SOFT
- **CREATED BY:** PACO MENENDEZ
- **BY THE SAME DEVELOPER:** SIR FRED

10 The Spectrum was popular in many European countries, particularly Spain, where home-grown software was developed to supplement titles exported from the UK. Opera Soft was one of the most successful Spanish developers and this classy 128K-only title helped cement its reputation at home and abroad. *La Abadia Del Crimen* (*The Abbey Of Crime*) was unofficially based on Umberto Eco's novel *The Name Of The Rose*, and put you in control of a Franciscan monk trying to solve a series of murders in a brilliantly depicted monastery. The game was not released outside its home country so the text is in Spanish, but don't let that put you off. This really is a game to discover.

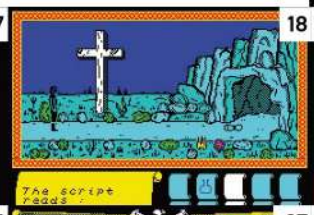


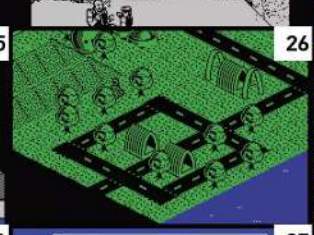
10

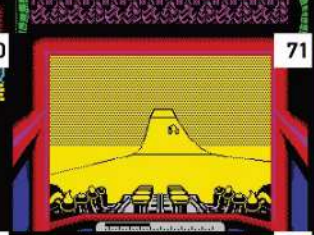
SPECTRUM 128

SPECTRUM 128
and the rest...

There were more games released for the 128 than most people imagine. Here, for your delectation, are screenshots of some of them. Of course, many of these titles can be legally downloaded from **www.worldofspectrum.org**







01 THE ADDAMS FAMILY
02 THE ARC OF YESOD
03 ARKANOID 2
04 AUF WIEDERSEHEN MONTY
05 BARBARIAN II
06 BATMAN THE MOVIE
07 BLIZZARD PASS
08 BLIZZARD'S RIFT
09 BUGGY BOY
10 CABAL
11 CANNON BUBBLE
12 CHASE HQ
13 DALEK ATTACK
14 DALEY THOMPSON'S OLYMPIC CHALLENGE
15 DAN DARE III
16 DARKMAN
17 DOUBLE DRAGON 3
18 DRAGONIA
19 DRAGON'S LAIR 2
20 ELITE
21 THE EMPIRE STRIKES BACK
22 ESCAPE FROM THE PLANET OF THE ROBOT MONSTERS
23 FAIRLIGHT
24 GAUNTLET III
25 GHOSTBUSTERS
26 GLIDER RIDER
27 GOLDEN AXE
28 HUDSON HAWK
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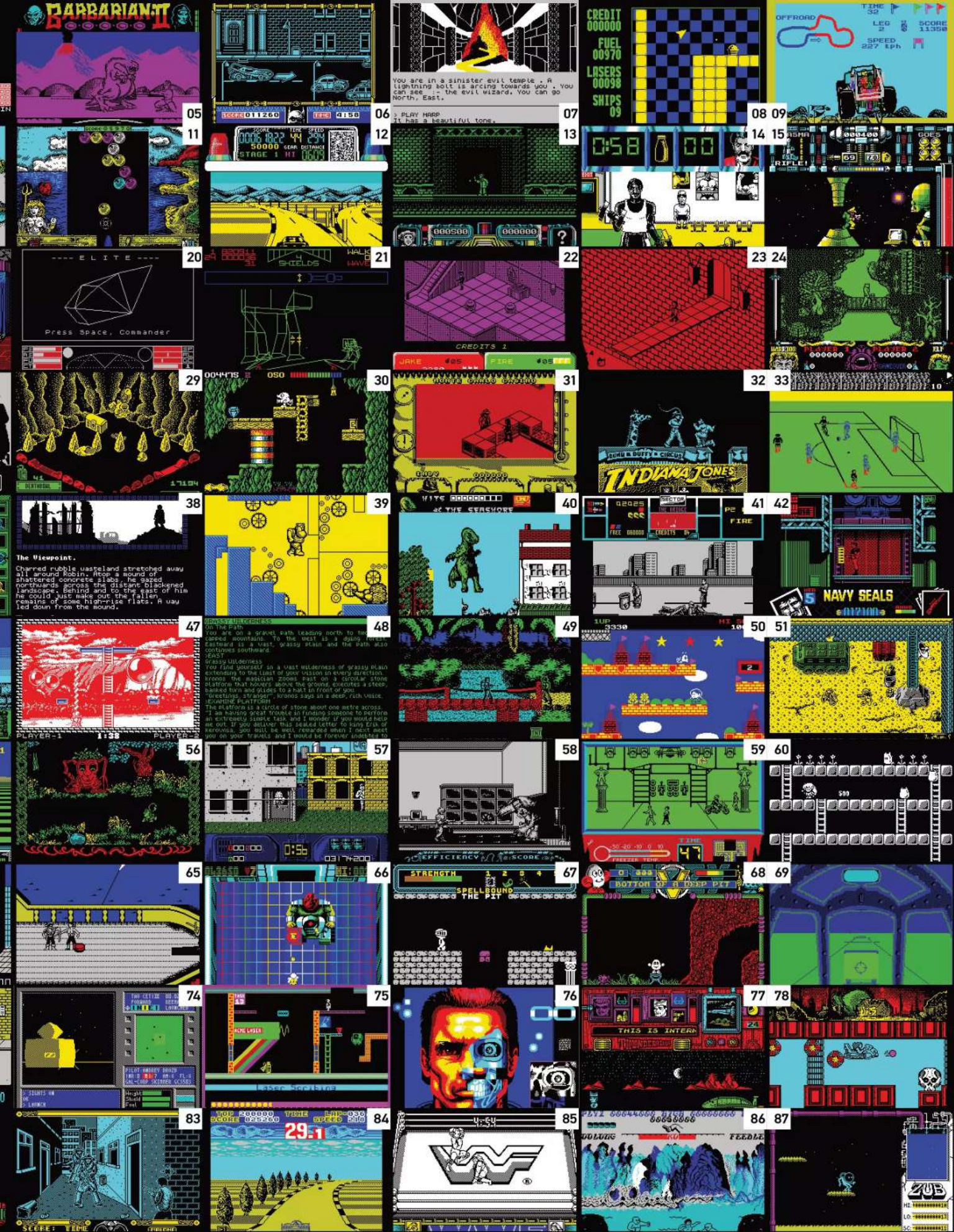
30 IMPOSSAMOLE
31 INDIANA JONES AND THE FATE OF ATLANTIS
32 INDIANA JONES AND THE LAST CRUSADE
33 INTERNATIONAL MATCH DAY
34 LED STORM
35 LITTLE COMPUTER PEOPLE
36 LODE RUNNER
37 MERCS
38 MINDFIGHTER
39 MONTY PYTHON'S FLYING CIRCUS
40 THE MUNCHER
41 NARC
42 NAVY SEALS
43 THE NEW ZEALAND STORY
44 ON REFLECTION
45 OPERATION THUNDERBOLT
46 OUTRUN
47 PANG
48 THE PAWN
49 PLATOON
50 RAINBOW ISLANDS
51 RAMBO III
52 RASTAN
53 RETURN OF THE JEDI
54 RICK DANGEROUS
55 ROAD BLASTERS
56 ROBIN OF THE WOOD
57 ROBOCOP 2
58 ROBOCOP 3
59 ROCKY HORROR PICTURE SHOW
60 ROD-LAND
61 SABOTEUR 2
62 SHADOW OF THE BEAST
63 SILKWORM
64 THE SIMPSONS
65 SKULL & CROSSBONES
66 SMASH TV
67 SPELLBOUND
68 SPELLBOUND DIZZY
69 SPITFIRE 40
70 STORMBRINGER
71 STUNT CAR RACER
72 SWIV
73 TARGET RENEGADE
74 TAU CETI – THE SPECIAL EDITION
75 TECHNICIAN TED: THE MEGAMIX
76 TERMINATOR 2
77 THUNDERBIRDS
78 THUNDERCATS
79 TIME SCANNER
80 TOTAL RECALL
81 TURBO OUTRUN
82 TURRICAN II
83 THE UNTOUCHABLES
84 WEC LE MANS
85 WWF WRESTLEMANIA
86 YIE AR KUNG-FU
87 ZUB


BARBARIAN II
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---- ELITE ----
Press Space, Commander
CREDITS 2
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32 33
INDIANA JONES
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41 42
The Viewpoint.
Charred rubble wasteland stretched away all around Robin. Atop a mound of shattered concrete slabs, he gazed northwards across the distant blackened landscape. Behind and to the east of him he could just make out the fallen remains of some high-rise flats. A way led down from the mound.
NAVY SEALS
47
48
49
50 51
GRASSY WILDERNESS
On The Path
You are on a gravel path leading north to two capped mountains. To the west is a dying forest. Eastward is a vast, grassy plain and the path also continues southward.
>EAST
Grassy Wilderness
You find yourself in a vast wilderness of grassy plain extending to the limit of your vision in every direction. Kronos the magician zooms past on a circular stone platform that hovers above the ground, executes a steep, banked turn and glides to a halt in front of you.
"Greetings, Stranger", Kronos says in a deep, rich voice.
>ENTER PLATFORM
The platform is a circle of stone about one metre across. "I am having great trouble in finding someone to perform an extremely simple task and I wonder if you would help me out. If you deliver this sealed letter to King Erik of Nervosia, you will be well rewarded when I next meet you on your travels and I would be forever indebted to
56
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59 60
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68 69
SPELLBOUND
THE PIT
BOTTOM OF A DEEP PIT
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86 87
SCORE: TIME:
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NINTENDO
GAMECUBE

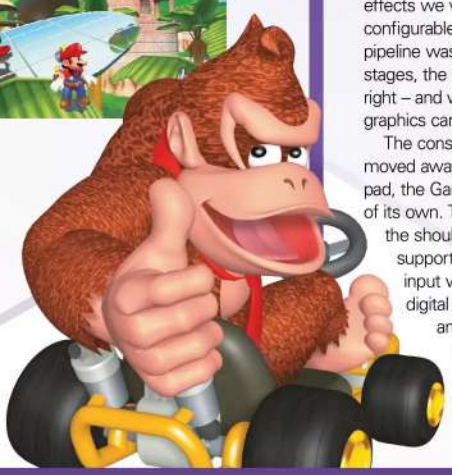
NINTENDO GAMECUBE

We take a look back at the system which struggled against the PlayStation 2 and Xbox but established the foundations for Nintendo's juggernaut, the Wii

Nintendo's standing in the videogame industry had taken something of a knock when the company began work on the GameCube, especially when compared to its glory days during the late Eighties and early Nineties. Following the runaway success of both the NES and SNES, the Nintendo 64 had been bullied into second place by the arrival of the PlayStation, a system which picked up where the SNES left off in the eyes of many players. The Nintendo 64 went on to sell 33 million units compared to the PlayStation's 102 million, forcing Nintendo to lick its wounds and ponder just what had gone so badly wrong.

Nintendo's insistence on sticking with cartridges had undoubtedly contributed to the N64's poor performance, and it was decided that the next console would use optical discs – a first for the company. Nintendo was also keen to ensure that its new system would offer decent power at a reasonable price, thereby attracting third-party support without driving away customers with a lofty price tag. To this end, Nintendo partnered with graphics hardware design company ArtX – led by Dr Wei Yen, who was previously Silicon Graphics' head of Nintendo Operations and had worked on the N64 – and began development on 'Flipper', the graphics processor which would power Project Dolphin, the early codename for the GameCube. The CPU was the other piece of the puzzle, and Nintendo would team up with IBM for the GameCube's brain, codenamed 'Gekko'.

"Coming from working on the N64, when we first saw the GameCube we were impressed by the step up in power," says Phil Tossell, who worked at Rare – a studio which had a storied partnership with Nintendo – during this period. "The N64 was a limited machine, particularly with respect to the size and amount of textures you were able to use. At the same time we were wary of the shift from cartridge to disc. At the time we were working on *Dinosaur* ▶



▶ *Planet* – which would transition to the GameCube and become *Star Fox Adventures* – and that utilised a streaming world, so we knew that getting that to work with a disc setup was going to be a real challenge."

The GameCube arrived on store shelves towards the end of 2001 and was accompanied by three games in Japan and 12 in North America – none of which had Mario in them, although his sibling took the spotlight in the enjoyable *Luigi's Mansion*. This ghost-busting adventure may have been the title that true-blood Nintendo fans flocked to at launch, but it was Factor 5's excellent *Star Wars Rogue Squadron II: Rogue Leader* which truly sold the machine to the masses. It offered the most convincing replication of George Lucas' epic series yet seen in videogame form, allowing players to step into their very own X-wing and play out all of their childhood fantasies. The fact that a third-party studio was able to produce something so polished at launch was a testament to accessibility of the system. "On the whole, the GameCube was very enjoyable to develop for," says Phil. "The range of effects we were able to achieve due to the multi-stage configurable graphics pipeline was remarkable. This pipeline was like an N64 on steroids – N64 had two stages, the GameCube had 16, if memory serves me right – and was a precursor to the fully-programmable graphics cards that were appearing on PCs."

The console's controller was also unique. While it moved away from the three-pronged approach of N64 pad, the GameCube controller still offered innovations of its own. The large A button was easy to reach, while the shoulder buttons offered analogue and digital support; a slight push triggered the analogue input while depressing them fully activated the digital command. Nintendo also added a second analogue stick, the C-Stick, which would be primarily used for camera control. "Almost everybody at Rare loved the controller," Phil says. "It still rates as one of the best controllers of all time for me."

» [GameCube] *Resident Evil 4* was intended to be a GameCube-exclusive title, however it made an appearance on the PS2.

Nintendo was keen to leave no stone unturned when it came to designing the GameCube, but there were some limitations. "The downsides were that it was severely constrained on memory," Phil says. "It only had 24MB of main memory with 16MB of so-called audio memory. Although the GameCube supported texture compression it wasn't appropriate for all textures. Fortunately, Rare's artists were already very adept at making use of smaller textures to great effect as the N64 permitted only tiny textures by comparison. The other downside was the disc. It was pretty slow, in particular with the seek time, so it was necessary to spin it up in plenty of time for when the data would actually need to be delivered. This was particularly tricky for *Star Fox Adventures* where we had taken advantage of the near-instantaneous access and transfer speed of cartridge ROM. It became a favourite pastime of testers to try and find ways to bypass or defeat the triggers set up to begin loading of the next section of a level to see if they could get it to visibly pop in or not appear at all!"

Having cut its teeth in the world of 3D with the N64, Nintendo was able to embrace the third dimension more freely thanks to the powerful

EVOLVING GAMES

The Nintendo franchises that benefitted from the Cube's extra power

THE LEGEND OF ZELDA

■ The GameCube was home to not one but two full-3D *Zelda* titles, with *Wind Waker* proving to be the most divisive of the pair upon its initial announcement. The gorgeous cel-shaded cartoon visuals and massive, water-based overworld didn't find favour with hardcore fans, but ironically the game is perhaps better regarded today than *Twilight Princess*, its successor. Both have been ported to the Wii U as HD updates since.

SUPER MARIO

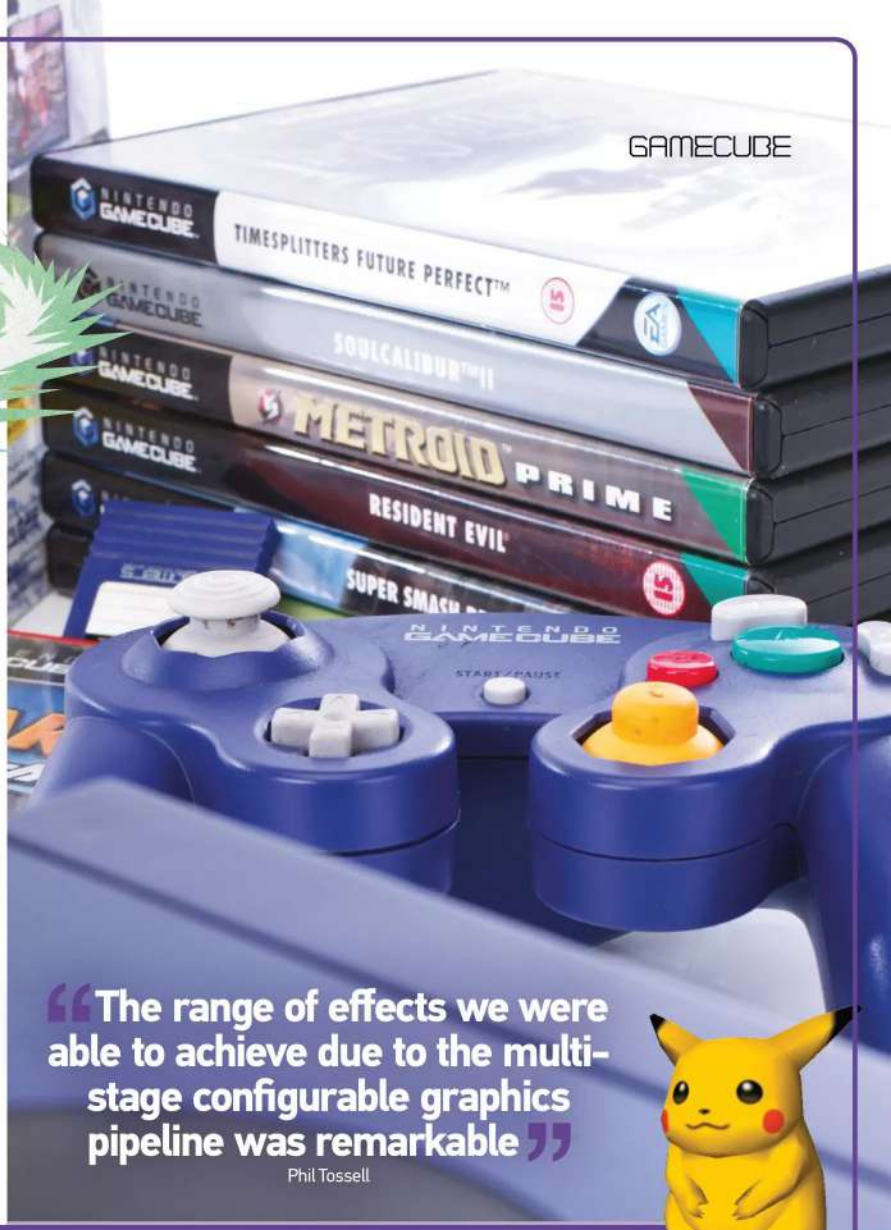
■ *Super Mario Sunshine* wasn't the sequel to *Super Mario 64* that many had hoped for, but it harnessed the power of the GameCube to present a unique twist on the concept of Mario in three dimensions. Using his F.L.U.D.D. (Flash Liquidizer Ultra Dousing Device), Mario has to clean up the gorgeous Isle Delfino, which looks joyfully colourful, thanks to the sheer clout of Nintendo's sixth-generation powerhouse.

METROID

■ Coded by Retro Studios, *Metroid Prime* took the 2D template laid down by *Metroid* and *Super Metroid* but brought it into the third dimension, adopting a first-person view and placing focus on the scanning ability of Samus Aran's power suit. While the move away from 2D might have been brave, *Prime* was able to include the hallmarks of the series, such as inventive boss battles, the morph ball and the opportunity to explore your surroundings for secrets.

» [GameCube] *Wind Waker* introduced us to a new Link, a more cartoon-like, cel-shaded iteration of the hero.

GameCube hardware, and some of the company's most accomplished games can be found on Nintendo's system. *Super Mario Sunshine* built on the fine work seen in *Super Mario 64* while expanding the iconic plumber's repertoire by gifting him with the 'F.L.U.D.D.' water shooter, while *The Legend Of Zelda: Wind Waker* gave us cel-shaded Link and a seemingly endless ocean world to explore. Elsewhere, *Pikmin* kick-started an entirely new IP for the company and was to be Nintendo's take on the real-time strategy genre. *Animal Crossing* was equally influential, delivering a 'life simulation' which was bursting with charm. Elsewhere, existing franchises such as *Mario Kart*, *Smash Bros.* and *Metroid* all benefitted from timely updates. *Metroid Prime* in particular was a significant release, taking the series into the realm of 3D and paving the way for a trilogy that scored highly in critical and commercial terms alike. ▶



"The range of effects we were able to achieve due to the multi-stage configurable graphics pipeline was remarkable"
Phil Tossell

DONKEY KONG

■ While many of Nintendo's franchises were taken to new levels on the GameCube, *Donkey Kong* received the most surprising upgrade. Instead of offering a platformer in the vein of *Donkey Kong Country* or *Donkey Kong 64*, *Donkey Kong Jungle Beat* mixed platforming with music. It was compatible with the DK Bongos, which had launched alongside *Donkey Konga* in 2003. Progress was achieved by tapping the drums and clapping in time with the music.

STAR FOX

■ Fox McCloud appeared twice (not counting *Smash Bros.*) on the GameCube. *Star Fox Adventures* – the final game to be developed by Rare before it was purchased by Microsoft – boasted some amazing visuals despite not being a traditional *Star Fox* outing. It remains one of the most technically impressive GameCube games, while *Star Fox Assault* returned to a traditional *Star Fox* formula, with space battles and four-player split-screen local multiplayer.

MARIO KART

■ Many gamers were disappointed that *Mario Kart 64* used 2D sprites, but Nintendo really pulled out all the stops when it came to making its GameCube sequel shine. The karts in *Mario Kart: Double Dash!!* – presented in full 3D this time – held two drivers at the same time, offering a co-op mode where one player drives and the player handles the weaponry and is able to perform a shove attack. A fun sequel with rubber banding being the only real bugbear.

INSIDE THE CUBE

We take a peek under the hood of the plucky little console

24 MB MOSYS 1T-SRAM 'SPLASH' SYSTEM RAM

■ This is the main system memory.

DISC DRIVE

■ This drive reads those miniature discs that GameCube games come on.

POWER SWITCH PCB

■ This board controls turning the power on and off. Not exciting, but pretty damn important.

HEAT SINK

■ This slab of metal helps keep the GameCube's CPU at a manageable temperature.

COOLING FAN

■ Along with the heat sink, this useful fan helps to keep the console at a cool temperature.

CONTROLLER BOARD

■ This circuit board connects to the main board via a ribbon (multi-wire) cable.

IBM GEKKO POWERPC CPU

■ The brains of the GameCube system, created by IBM and clocked at 485 MHz.

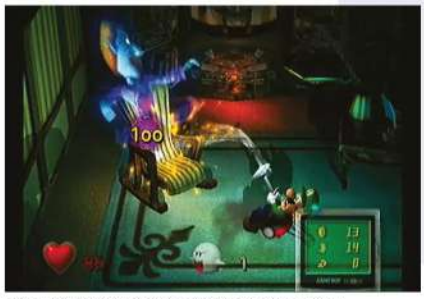
ATI FLIPPER (GPU)

■ This chip handles all of the visuals, and even does some of the sound too.

Second-party studios, like Rare, were also put to work on the GameCube, but the company didn't get the special treatment many assume it did. "I think people labour under the misconception that Rare had a lot of privileged access, but in reality we didn't," reveals Phil. "By and large it mostly translated into getting things like dev kits and SDK access before anybody else, but as far as making use of the hardware in the best way, we had to do that ourselves. Nintendo's documentation up until the GameCube was pretty terrible, and I think actually that one of the unmentioned things about the GameCube was that for the first time the documentation was actually really good. This made it easier to fully make use of all the available features of the hardware."

Rare's output on the GameCube may have been curtailed by the fact that it was sold to Microsoft in 2002, but the firm still managed to dazzle with its final release. "We ported the *Dinosaur Planet* engine onto the GameCube," explains Tossell. "We really rapidly ported it over and started integrating as many new graphical features as we could in a really short space of time. We had this little demo scene with a SharpClaw character setup with really nice lighting, texturing and projected shadows. When we showed Nintendo they were so impressed that they started asking why their graphics didn't look as good! *Star Fox Adventures* is still regarded as looking great, even now. Effects like fur, grass, and reflective and refractive water still hold up. I had the opportunity to travel to Kyoto to meet Miyamoto-san and Imamura-san. I'm not really a person that gets star struck but it was an experience that will stick with me; sitting in design meetings discussing with these guys about what we should do with *Star Fox Adventures* is not something I'll forget."

"One of the unmentioned things about the GameCube was that for the first time the documentation was actually really good"
Phil Tossell



» [GameCube] Mario was missing in the GameCube launch lineup, his brother took centre stage with *Luigi's Mansion* instead.

Not every studio got that kind of treatment, of course, but Nintendo made an effort to make third parties feel more at home on the GameCube than they did on the N64. Initially, third-party support for the GameCube was robust, with many companies porting over their PlayStation 2 releases to Nintendo's machine thanks to the parity in power. Sega was an early supporter, with titles like *Crazy Taxi*, *Super Monkey Ball* and *Sonic Adventure 2* all finding a receptive audience on the GameCube – ironic when you consider that the two companies had been bitter rivals during the previous few console generations. Capcom was another firm which bet big on the GameCube, announcing a series of exclusives such as *Viewtiful Joe*, *P.N.03*, *Resident Evil 4* and *Killer 7*. Making the fourth mainline *Resident Evil* title a GameCube exclusive was a massive vote of confidence from the developer, and for a time it seemed like Nintendo had overcome the issue of third-party support which had blighted the N64.

However, while Nintendo's own games sold well on the console, external publishers found less success. As

» [GameCube] *F-Zero GX* was a blisteringly fast racing game that offered arcade-quality experiences on Nintendo's humble console.

it became apparent that the PlayStation 2 was to be the dominant system of the generation, support began to melt away. To make matters worse, Microsoft's Xbox – also launched in 2001 – had effectively stepped into second place by offering more raw power and functionality, pushing the GameCube even further down the pecking order. The only saving grace for Nintendo was that it remained second in its native Japan, where the Xbox had little impact.

The biggest blow would be Capcom's decision to backtrack on its promise to offer exclusive support to Nintendo's machine. *Viewtiful Joe* would gain rave reviews but only sold around 275,000 units, leading Capcom to port it to the PlayStation 2 in order to bolster profitability. The same would happen with *Resident Evil 4*, with Capcom bowing to fan pressure and confirming two months before it arrived on

ESSENTIAL PERIPHERALS

GAME BOY PLAYER

■ One of the most appealing GameCube peripherals available for the system, the Game Boy Player bolted onto the bottom of the console and allow players to run their Game Boy Advance games on the machine.

HORI GAME BOY PLAYER CONTROLLER

■ Designed for use with the Game Boy Player and lacking many of the features of the standard pad, this retro peripheral works with many standard games, such as *Sonic Mega Collection*.

DK BONGOS

■ Compatible with the likes of *Donkey Konga*, *Donkey Konga 2*, *Donkey Konga 3* and *Donkey Kong Jungle Beat*, the DK Bongos controller has to rate as one of the most unusual, yet surprisingly functional, peripherals in the history of gaming.

MEMORY CARD

■ Unlike modern hard drive-based systems the GameCube required a memory card to save data. *Animal Crossing* and *Pokémon Colosseum* – two titles which have large save files – shipped with a dedicated memory card in the game box.

MICROPHONE

■ Compatible with *Mario Party 6*, *Mario Party 7*, *Karaoke Revolution Party*, *Odama* and *Densetsu No Quiz Ou Ketteisen*, the GameCube microphone allowed players to interact with games using their voice to issue commands.

WAVEBIRD

■ The WaveBird offered wireless gaming a generation before Sony and Microsoft. A small receiver plugs into the joypad port on the console, while the pad itself has an operational range of around 20 feet.

ASCII KEYBOARD CONTROLLER

■ This looks like someone has snapped a GameCube pad in two and stuck the halves onto either end of a keyboard. Despite this look, it was useful for inputting text in *Phantasy Star Online*.

LINK CABLE

■ Many titles – such as *The Legend Of Zelda: Four Swords Adventures* – allowed players to connect Game Boy Advance consoles to their GameCube systems to unlock additional features – such as second-screen gameplay.

» [GameCube] *Mario Kart Double Dash!!* flaunted the GameCube's ability to kick-start any local-multiplayer session with ease.

▶ the GameCube that the survival horror outing would also be coming to Sony's console at a later date, an announcement which seriously undermined sales of the Nintendo version. In the end, the only title out of the fabled 'Capcom Five' to remain GameCube exclusive was *P.N.03* – the fifth game, *Dead Phoenix*, was cancelled in 2003 and Suda51's *Killer7* launched on the GameCube and PlayStation 2 at the same time. Capcom's commitment to the GameCube had been a massive shot in the arm for Nintendo and seemed to suggest that the console was more than capable of giving the PS2 a run for its money in terms of sales figures, but by going back on the deal, the publisher dealt a blow to the GameCube's fortunes, as well as its standing in the eyes of the games industry. PlayStation 2 owners had little reason to invest in Nintendo's system when titles like *Resident Evil 4* were coming to their console anyway, and this move robbed the GameCube of the momentum it crucially needed to attract more buyers.

» [GameCube] *Mario Sunshine* didn't hit the acclaim of *Mario 64*, but it was still a commendable, and great-looking platformer.

"Developers simply weren't willing to spend the time and money to port their games over to the GameCube"

Phil Tossell

The GameCube's eventual install base totalled around 22 million units, way behind the PlayStation 2's 153 million and a shade behind the Xbox's 24 million. As is often the case, a combination of factors contributed to its lacklustre performance, but some stand out more than others. "I believe the GameCube struggled because there just wasn't the variety of content," says Phil. "The Xbox and PS2 were largely comparable power-wise and many developers simply weren't willing to spend the time and money to port their games over to the GameCube for the relatively small returns. Nintendo were left to support the console all on their own and it just wasn't enough for a wider audience."

While the GameCube appeared to be the next step in Nintendo's downward trajectory – following the N64 which sold 33 million compared to the 49 million units of its forerunner, the SNES – it would lay down the framework for Nintendo's most successful home console ever, and that is perhaps its most enduring legacy. Despite its innovative motion-sensing control system, 2005's Wii was an evolution of the GameCube in purely technical terms, boasting the same core components. It would go on to sell over 100 million units, despite the fact that both the PS3 and Xbox 360 were significantly more powerful and offered impressive HD visuals.

While the GameCube failed to place Nintendo on top during its active life, its eye-catching design, extensive range of unique peripherals and – perhaps most important of all – its selection of excellent first-party Nintendo releases have ensured that in recent times it has enjoyed something of a modest resurgence among collectors. The console's unique Japanese software packaging – which consists of a small, clear plastic case with a card sleeve – makes it incredibly appealing for import buyers, while the bright orange 'Spice' variant of the system and the super-exclusive Panasonic Q fetch respectable prices online. Overall, the GameCube is actually one of the more affordable retro systems when it comes to collecting, and it's possible to purchase a console and a selection of good games for a price that won't leave your wallet feeling too empty. Expect that to change over the next few years as its popularity increases, though.

The GameCube may have been overshadowed by its commercially successful successor, but while the Wii was an underpowered, left-field champion, the GameCube marked the last time that Nintendo truly tried to fight on even technological terms with its rivals and balk to industry trends and offer something that was deemed more 'safe' and 'mainstream'.

When it came to raw power it was more than a match for the PlayStation 2 and Xbox, but this parity and the Nintendo name simply wasn't enough to bring results – in terms of sales, at least. Nintendo went back to the drawing board for the Wii and decided to offer players an experience which simply couldn't be replicated anywhere else, and that ethos has continued right up to the present day. ✱

» [GameCube] Sega made a home for itself on its former rival's console.

WHAT MADE IT GREAT

UNIQUE DISCS

■ The proprietary optical discs were designed to deter piracy.

COMPACT CASING

■ The GameCube was refreshingly compact and even had a carry handle.

FOUR PORTS

■ The GameCube was perfect for parties, all you needed was the controllers.

PARITY OF POWER

■ Despite its small size, the Cube could match its rivals.

UNIQUE COMPATIBILITY

■ You could play GBA, GBC and original Game Boy games via a special adapter.

WHERE IT FAILED

POOR THIRD-PARTY SUPPORT

■ Nintendo failed to secure consistent third-party deals.

SMALL DISC CAPACITY

■ 1.5GB games were modest, but the rivals had more space.

TOO FOCUSED ON THE FAMILY

■ The design was seen by some as too kid-friendly.

NOT ENOUGH ONLINE

■ It didn't support the online console gaming scene enough.

NO INTERNAL STORAGE

■ The GameCube's memory cards were a mess.

COLE VISIO

CO

From the same company that would inflict the Cabbage Patch Kids upon the world, the ColecoVision entered an industry on the verge of collapse. We speak to the man behind the machine that could have ruled the world

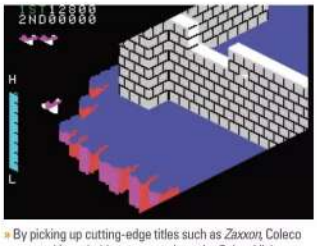
There are some striking similarities between the ColecoVision and Sony's all-conquering PlayStation. Both machines were released by companies that nominally operated outside the videogame industry – Coleco began life as Connecticut Leather Company before moving into children's toys, and Sony was, and still is, a purveyor of consumer electronics, movies and music. Both platforms were also more powerful than their closest competitors and relied heavily on third-party licences, with Coleco signing up some of the best arcade titles of the era, while Sony secured victory with the assistance of talented studios such as Namco, Square and Konami. However, it's there that the similarity ends: while the PlayStation went on to dominate the 32-bit era, the ColecoVision's potential was stymied by the videogame crash of the Eighties – a cataclysmic event brought on by market leader Atari's poor business strategy.

The ColecoVision hardware was the brainchild of Eric Bromley, a talented designer and engineer who had previously headed up R&D divisions within various coin-op firms, the most notable of which was Midway. He was in between jobs when Coleco's Mel Gershman asked him to come in for an interview. "He hired me within 15 minutes of my arrival," beams Bromley today. Coleco's output at that time was mostly electronic toys and play equipment, the former being something that caught Bromley's eye. "Coleco made one of my all-time favourite games: Rod Hockey," he explains. "They also made swimming pools, Holly Hobbie ovens, girl's playhouses, and various types of snow-riding items." However, with videogame sales booming and millions of dollars up for grabs, Coleco was looking to enter the market with its own home machine; the company knew the potential because it had already tentatively dipped a toe in the water during the Seventies with a range of handhelds and a simplistic TV game.

"The game with which we had our initial success was Telstar, which was promoted in 1976 as the first arcade home videogame under $100," says Bromley. The talented designer had an even grander vision in mind, but bringing it to fruition was difficult. "Coleco CEO Arnold Greenberg and I desperately wanted to make an arcade-quality, cartridge-programmable videogame," states Bromley. "I had started to do the preliminary design and costing for the ColecoVision three years – maybe even more – before its debut in 1982, but it was always shot down as too costly. Marketing a product at a magical retail price point was the key to everything Coleco produced; it was their mantra. Our team had developed a design around a Texas Instruments video chip and a sound chip from General Instruments, but it was RAM-intensive and therefore way above the cost limits." With the profit margin being the deciding factor, the situation remained static until 1981. "I picked up a copy of the *Wall Street Journal* and saw an article about how the cost of RAM had declined," explains Bromley. "I retrieved the latest cost analysis and substituted the new pricing. It came very close to the target price point. I ran to inform Arnold Greenberg and burst into his office without even asking his secretary; before he could react I showed him the new figures. Ten minutes later we were working on a new project with the working name 'ColecoVision'. We were going to find a really good name for it as soon as we could show something to our sales and marketing people." They never came up with a new moniker, and the working title stuck.

With the financial resources in place to make his dream a reality, Bromley set about engineering what would be considered the most powerful gaming machine of the period. "The key to the ColecoVision was that this was the first home videogame that could display

COLECOVISION



» By picking up cutting-edge titles such as *Zaxxon*, Coleco was making a bold statement about the ColecoVision.

and update the entire screen at almost arcade resolution, which in 1982 was 256x192 pixels, and at the same time move objects around at a speed that would test the hand-eye co-ordination of teenagers," he comments. "In order to do that, we needed to employ an array of RAM chips, which could create a graphic matrix, which was then sent out to the TV. Texas Instruments' chip was extremely clever – it could move a limited number of foreground objects very rapidly on a second layer over the background without redrawing the entire screen. Both layers required RAM, but with cheaper RAM we could produce arcade-quality games rendered by a console that could be sold to retailers for under $130."

Bromley was the perfect person to tackle such a project because he was a keen arcade gamer himself and instinctively knew what was required to replicate the thrills generated by cutting-edge coin-op hardware. "I was a coin-op alumnus," he says. "I knew almost everyone in the business and had access to the top people in each company. We knew that in order to sell the console we needed to have a cartridge library – and thus began the licensing frenzy. I introduced Coleco's head of licensing Al Kahn to many of the coin-op game companies. He would spearhead the licensing while my team developed the console that could render them. I was part marketing and part design."

Arcade titles of the day had the power to make or break new home hardware – a fact that Bromley was acutely aware of, because acquiring killer titles was all part of his overall strategy for the ColecoVision. "Originally, I had two games in mind; if we could get the rights, we could blow everyone out," he states. "The first was *Zaxxon*, a 3D game which was one of the best-earning titles at the time. The other was *Turbo*, one of the best driving games ever – at least in the early Eighties. I would have liked *Space Invaders* and *Pac-Man*, but Atari had already gobbled them up. I argued against doing 'knock-offs', which was the custom of many home game companies at the time. I urged Arnold Greenberg to pay for the licences. Besides being the right thing to do, I argued that if we paid for the actual arcade game title, we did not have to describe the game or wait for customer word of mouth to promote its virtues. Just say *Turbo* or *Zaxxon* and every kid would know what you were talking about and immediately want it."

This approach – which seems obvious today but was considered high-risk at the time, hence the proliferation of clones based on famous coin-op machines – had a two-way advantage. "When a toy company promotes its home games, usually months later than the arcade introduction, the TV ads and publicity create new interest in the original arcade game," elaborates Bromley. "Because we often could not completely fit most games onto a cartridge, the kids went back to the arcades to see all the levels and features not found in the home version. Thus, we created an amazing commercial symbiosis: because the kids already knew what the game was, home sales didn't ramp up; they exploded. Thanks to that explosion, the media covered the products and prolonged the revenue stream at the arcade venues. Both the coin-op operators and manufacturers benefited from this exposure."

However, despite Bromley's hard work and the creation of a visionary business strategy that had the potential to make the company millions of dollars, the plug was very nearly pulled on the entire ColecoVision project. "Even at a very late date, Coleco's

"We wanted to make an arcade-quality videogame, but it was always shot down as too costly"

SPECIFICATIONS

Year released: 1982

Original price: $174.99

Associated magazines: *ColecoVision Experience*

Buy it now for: £40+

Why the ColecoVision was great: More powerful than its rivals and combining arcade-quality games with the tantalising promise of expandability, it's little wonder that the ColecoVision sold impressively when it was released. Official coin-op conversions of massive titles such as *Frogger*, *Zaxxon*, *Donkey Kong* and *Turbo* were light years ahead of what was available on the Atari 2600/VCS. Had the videogame crash not happened when it did, chances are Coleco would still be around and its console would be viewed in the same light as the NES.

» The Coleco Adam in its 'Expansion Module' variant. The machine was unfortunately dogged by technical issues.

sales and marketing was about to drop the product," he remembers with a grimace. "I had to privately talk Arnold Greenberg into going forward. My argument was that the Atari VCS/2600 and Mattel Intellivision could not do either *Zaxxon* or *Turbo* in any way close to the ColecoVision, which had twice the horizontal resolution of the Atari VCS and half again that of the Intellivision. Atari was using what was essentially a chip that directly wrote the screen on the fly; thus, any complex graphic would take too long to be displayed. Add to that speed limitations that made it impossible to render graphically interesting objects fast enough to create hand-eye co-ordination difficulties. It just could not be accomplished with Atari VCS technology. The Intellivision had even more issues. It used General Instruments' five-chip set with several chips used to write different sectors of the screen. There were extensive restrictions on moving from one sector to another, creating problems moving objects diagonally over the boundaries."

Bromley was very aware of the Intellivision's limitations because he had a hand in developing the hardware inside the rival console, as at one point Coleco was about to snap up the chipset itself. "I helped develop the chipset and its operating system," he reveals. "After spending almost two years working with General Instruments, trying to fix a myriad of problems, I suggested that Coleco walk away from it. We did, and much to my amusement Mattel bought it. I was wild with glee. We knew that we could be vastly better than our competitors and they couldn't fight back."

Bromley's unwavering faith in his creation paid off, because the ColecoVision eventually made it into production. The machine's raw graphical power and clear technological advantage over the competition helped it sell 2 million units before the world came crashing down in 1983, but possibly the biggest contribution to the ColecoVision's success was the game that was given away free with each console: Nintendo's *Donkey Kong*. The story of how Coleco came to acquire this highly desirable licence from under the nose of the incumbent Atari is the stuff of videogame folklore, and Bromley is more than happy to exclusively reveal the entire gripping saga.

"It all began with a business trip to Kyoto," recounts Bromley. He was in Japan to meet with Nintendo president Hiroshi Yamauchi. "It was late afternoon when we were allowed to enter the supreme chamber. The room was one quarter the length and width of a football field and was completely done, floor to ceiling, in matched teak panels. I don't recall as much as a clock or any picture on the walls. The only thing that broke up this expanse was the doorway opening, one eight-foot desk in the centre of the room with nothing on it but a pad and pencil, two plain wooden chairs set in front of the desk and one very tall-backed leather chair behind it. When we entered, we were the fifth, sixth and seventh objects in the room. I sat down in the left-most chair in front of the desk, and my friend, translator and mentor in all things Japanese, Makihara-san, sat next to me. Yamauchi-san's aide said 'Yamauchi-san will be in shortly,' and then, right on cue, he made his entrance. He came into the room via the parting of the wall behind the desk, which we soon realised was a door disguised as a panel. I then noticed that our entrance way was no longer visible – apparently all doors to this room were panels, or vice versa. I fully expected that behind every panel in the room was a samurai warrior ready to pounce, lest I make the smallest mistake in etiquette!" The intense formality of the setting was clearly intended to intimidate those who arrived at Nintendo's offices

Community

THE BEST COLECOVISION WEBSITES

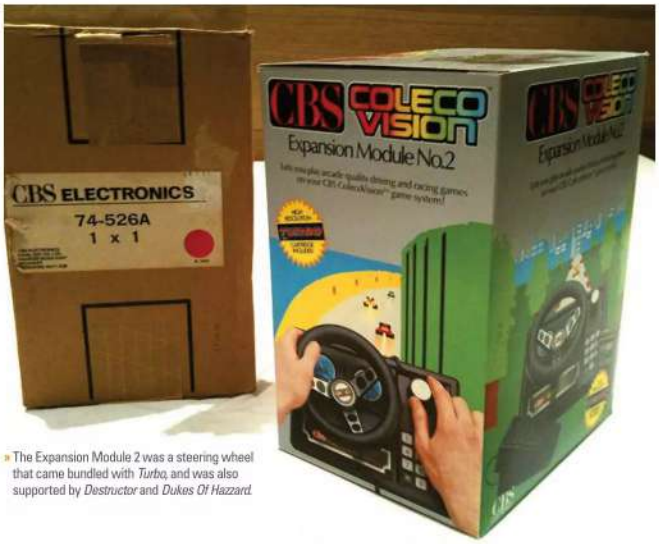
ColecoVision Zone
www.colecovisionzone.com

■ A superlative ColecoVision reference site with complete listings of games, a collection of vintage TV commercials, original documents, and photos of rare prototypes. The textual information is ably supported by some brilliant photographs and you can even browse issues of the short-lived *ColecoVision Experience* magazine.

ColecoVision.dk
www.colecovision.dk

■ A Danish fan site that has a particular focus on the budding ColecoVision homebrew scene. As well as plenty of information about the console, it's also the home of CollectorVision, a group of coders that is producing games for the machine. A legally dubious version of *Mario Bros* is the most impressive effort, and more titles are promised.

This advert was released late in the console's life and shows the Super Game Module, which was never released.



» The Expansion Module 2 was a steering wheel that came bundled with *Turbo*, and was also supported by *Destructor* and *Dukes Of Hazzard*.

to do business, and the mind-games from its president continued as the discussions progressed.

"Yamauchi-san seemed not to understand a word of English," explains Bromley with a wry smile. "Every word we said was translated. A year later I found out that he understands English extremely well." Other nefarious tactics were employed to ensure that the Japanese firm was always in the strongest position. "I learned never to tell Yamauchi-san the correct day or even time of our departure," says Bromley, "because he played an effective negotiating game. He continuously discussed non-essential items and held back important responses, then, when there was very little time before we had to leave to make the train back to Tokyo, he began the real negotiations. At this point there was a terrible pull to give in on any remaining points in order to make the train. Thus began my first lesson in commercial samurai strategy: always lie about when you must leave!"

Bromley returned to Nintendo the next day to resume negotiations, and it was on this fateful visit that he stumbled across the game that would become the ColecoVision's secret weapon. "We were shown some very unexciting videogames, as well as some handhelds that were very popular in Japan, but I felt these wouldn't work in the US," remembers Bromley. "Afterwards we had an informal late lunch at the headquarters. It was a very simple Japanese meal, not meant to impress. I enjoyed it thoroughly. After trying lots of unknown stuff – I ate these things with the conviction that they did not want me dead, and besides, they also ate it – I accepted many cups of tea, after which I asked about using the bathroom." What followed is probably the most famous trip to a toilet in videogame history.

"It turned out that the bathroom was on the floor above," explains Bromley. "I decided to find it alone, and when I came out I passed an open door that displayed a familiar silhouette – the standard upright cabinet seen in all videogame arcades. I turned on the light and there, for the first time, was *Donkey Kong*, complete with a picture of a gorilla on each side. I fell in love right there, no question." Bromley knew this title – which was hitherto unknown in the West – could be the game to propel his console into the public consciousness. He also knew he had to act fast. "A meeting was arranged for the next day," he reveals. "I said I wanted the rights to *Donkey Kong*. I didn't want Atari to find out about this game. After a lengthy conversation, Makihara-san told me that Yamauchi-san wanted a $200,000 advance and a $2 per unit royalty. It was around 10am and Yamauchi-san knew that I needed to catch my train, so then he added the kicker: the $200,000 must be wired to his account by midnight, or it's not a deal." The odds were most certainly against Bromley. "The most Coleco had ever paid for an advance for any licence up to then was $5,000," he says. "Also, they never, ever paid more than five per cent of their selling price; the worst case would be about 90 cents. Now because of the need to wire the money before 12am Tokyo time, I needed to take the next available train. I would have to call as soon as I got back to my hotel in Tokyo, which would be in the afternoon and therefore wake up Arnold Greenberg in the US, the only one who could authorise an immediate wire transfer. I was to call him at home, wake him up, and then ask him to wire $200,000 for a game he has never seen or heard of. If that wasn't bad enough, he then has to agree to more than twice the usual royalty amount!"

Bromley stayed firm, spurred on by the fact that he knew that *Donkey Kong* would be a smash hit once Western gamers laid eyes on it. "Upon my return to Tokyo, I called Arnold Greenberg from my room – I was shaking a little," he admits. "It was about four in the morning and I got: 'Whaaaaa? Do you know what time it is?' I referred him to a conversation we had days before with marketing and sales; we all agreed we needed a really spectacular game to bundle with the ColecoVision console to create an impact. I then told him of the conditions: $200,000 advance and the $2 per unit royalty. I said: 'I have found that game.' To my surprise, all he said was: 'Is it really that good?' I told him that it was as good as *Pac-Man*. He asked what it was called and I uttered '*Donkey Kong*'. Silence. For the first time

» This portable ColecoVision was produced by legendary hardware modder Ben 'Ben Heck' Heckendorn.

Variants

ColecoVision

■ The original machine was launched in 1982 with *Donkey Kong*. 500,000 units were sold, largely on the strength of this conversion. The all-important expansion slot offered the ability to upgrade, but sadly the console was discontinued in 1985.

ColecoVision Adam

■ The Adam came as an expansion for the core console or a standalone computer, capable of playing ColecoVision cartridges and more. Defects plagued the machine and it was discontinued in 1984; Coleco lost a reported $80 million on it.

Super Game Module

■ The final expansion module was effectively an upgrade to boost its power. Similar to Nintendo's Famicom Disk System, games came on high-capacity 'wafers', with more memory for bigger games. *Super Donkey Kong* was planned, but the module never made it out.

Dina 2-in-1

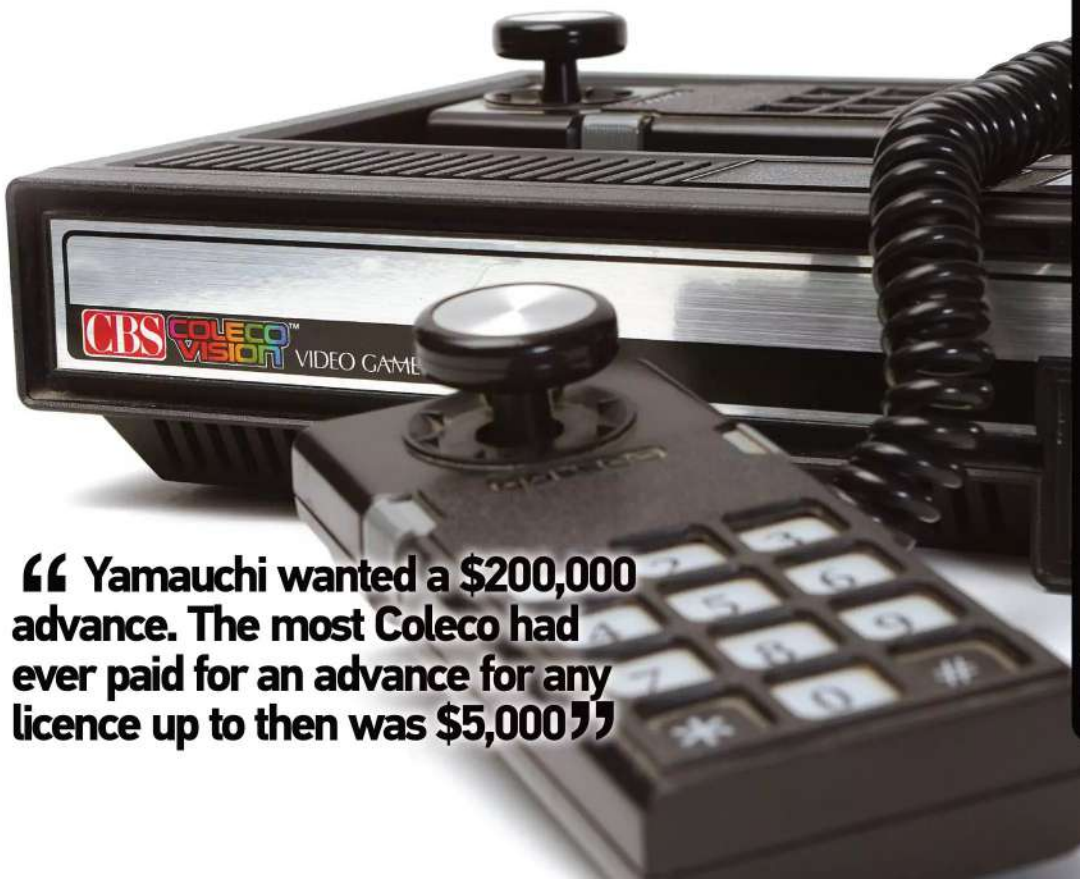
■ A clone of the ColecoVision and Sega SG-1000 produced by Taiwan-based Bit Corporation, this machine had a cartridge slot for each format. The pads were more traditional, and the ColecoVision's numerical keypad was moved to the main body.

I realised how silly the name sounded. What seemed like an hour later he said, 'Okay. Let's do it,' and said he would wire over the money as soon as the banks opened that day." Bromley had just secured the home console rights to one of the hottest games of the Eighties – or at least, he thought he had, until the saga took an unwelcome twist thanks largely to the Japanese way of doing business.

"Legal contracts were not something that was part of Japanese culture at that time," he explains. "We were going to create the agreement over dinner. Makihara-san, who at this point was accepted as official translator for both sides, started the negotiations and wrote down six or seven points on a cloth napkin. I forget how many points we ended up with, but when translated into English on still another napkin, I could read them all without unfolding it. We had a deal. I took my $200,000 napkin and went home." Upon returning to the US, Bromley began to have doubts about the strength of the deal he had just secured. "In the electric buzz of Tokyo, my linen napkin – now valued in the millions based on sales projections – seemed adequate. I can't remember the look on Coleco's in-house attorney's face when I pulled out the napkin, because I didn't want to see it. I tried to explain that this is how the Japanese do business: you all get high on sake, write down the points that matter, and try to get up in the morning without a hangover."

Coleco's TV adverts went to great lengths to point out the console's superiority over the ageing Atari VCS/2600.

Bromley's sudden apprehensiveness was well founded; at the next Consumer Electronics Show, the house of cards very nearly collapsed completely. After months of trying to get Nintendo to sign a contact that was legally binding in the eyes of US law, Coleco finally got Yamauchi to agree to hand over the vital document at the company's CES booth. Needless to say, it didn't exactly go according to plan. "His daughter Yoko spoke to me and said that Yamauchi-san had given *Donkey Kong* to Atari," says Bromley with a face that still displays the pain of the moment. "I froze. *Donkey Kong* was going to be the ColecoVision anchor. All our marketing plans were placed around that game. I was in a cold sweat. I sat down in my room and was thoroughly depressed for about two hours. I think it was 10 or 11pm



"Yamauchi wanted a $200,000 advance. The most Coleco had ever paid for an advance for any licence up to then was $5,000"

Collecto-Vision

Because the ColecoVision made such an impact at the time with its arcade-quality visuals, it's perhaps not surprising to learn that a sizable collector's market has grown up around it today. ColecoVision fanatic Ole Nielsen – the man behind ColecoVision.dk – vividly recalls the day his obsession started. "It was love at first sight," he says. "For me, it was primarily the graphics, tunes, and realistic game sounds the machine could deliver." The inherent appeal of the machine is amplified by the fact that it's ideal for people looking to build a complete anthology of titles in a short space of time.

"The Colecovision is perfect for collectors," states Junior Tétreault, founder of ColecoVision Zone. "The game's library is not too big – around 125 titles – and most of the games are fun." That said, there are a handful of super-rare carts that continue to elude devoted ColecoVision addicts. "Xonox games are hard to find," reveals Tétreault. "The company released 12 games and most of them are very bad and didn't sell well. Two of the double-headers, *Tomarc The Barbarian/Motocross Racer* and *Sir Lancelot/Robin Hood*, are the rarest. The late release of *Tournament Tennis* by Imagic, when the console was almost discontinued, makes this game a sought-after title. The four educational games made by Fisher-Price – *Dance Fantasy, Linking Logic, Logic Levels* and *Memory Manor* – are almost impossible to find boxed. Ironically, the most common cartridge, *Donkey Kong*, is also the rarest boxed game in North America. The cart came with the console without a box but the game was also sold as a standard retail release."

DAVE JOHNSON

Director of video graphics, Coleco

How did you become involved?
I was working in New York as a graphic designer but, having studied computer graphics, I was looking for an opportunity to work in my field. I answered an ad and met with a headhunter who set up an interview with Eric Bromley, the head of electronic games at Coleco. He was in town for Toy Fair, an annual industry event.

What did you think of the ColecoVision when you first saw it?
My first exposure was at the aforementioned Toy Fair during my job interview. There was a video wall showing mock-ups of animated cardboard cutouts. I knew enough about video, animation and computer graphics to realise that the mock-ups were fake and I pointed this out to Mr Bromley. He then pointed to one video of a Smurf running across a side-scrolling background. It was clear that this was real and was several notches above the existing home game systems.

What did your role involve specifically?
I ran a department of artists who were responsible for the development of graphics for all of the games. Day-to-day involved visiting every artist and offering suggestions, technical help, art direction, options and so on. I worked, hands-on, on several games when there was time.

What was it like working at Coleco at this time?
It was a group of very talented, super-smart, very motivated people. At the beginning, we didn't know if the product would be a success, but it was great fun in any case. As the product took off, it was very rewarding. But, by the end, we were all a little tired of the place.

How did you go about converting arcade hits to the machine and what kind of support did you get from the original developer?
The deals with the coin-op manufacturers were usually a mystery to the design group, especially in the beginning. A new machine would appear from Japan and we would set to work studying it. We had no support from the manufacturers and, at that time, code was not at all portable. We would find someone who had a knack for the game and spend hours videotaping every level. Game designers would then sit, review the tapes and document the gameplay. The artists would reproduce the graphics.

You also created original titles for the console. How did the design process differ from the coin-op ports?
A similar production process as in the ports in some respects: a game design document, a set of graphics. The creative process, in some cases, was slower and more involving. *Smurf* was the first. Eric Bromley was the lead on the project. I have to give him credit with inventing the side-scrolling concept. I'll take credit for the idea of points as you pass certain hurdles. Seemingly simple concepts but they were new at the time.

Is it true you personally asked for Coleco to secure the rights to convert *Spy Hunter* because you were such a fan of the coin-op?
There was an annual trade show where coin-op manufacturers showed off their wares. I went with George Kiss, the head of software development and also my boss. I remember begging him on the plane home to buy the rights. I was like a kid asking for a Christmas present. I really thought the music was hot; the game itself was not that interesting. We did get the rights but who knows if my request had any effect.

Why was there such a long pause before each ColecoVision loaded? Was this a technical thing?
No, no, no! Please put that rumour to rest! One day, Eric Bromley stood at my desk with a bunch of marketing execs and watched a simulator of the console. They had their watches out and counted down, deciding how long the opening screen should last. It was all about branding. The later versions of the operating system fixed that, but it was too late.

when the depression turned to anger. I called Yamauchi-san's room and asked to talk with him. His daughter answered and said that he had gone to sleep and was not to be disturbed; she said it very politely and I hung up. But I got still angrier at having my dream disintegrated by Atari's money, so I called again. She answered and I poured my heart out; I told her how the ColecoVision was my dream, how I put together a great team to build the best home videogame console ever and that *Donkey Kong* would look like crap on the Atari VCS. I guess she liked me because she asked if I could be there in 15 minutes. It was apparent that she was my ally – she believed me that this was not just a product, but also my dream. I had someone who believed what I said about the virtues of the ColecoVision and could relate them to Yamauchi-san as no one else could." With Yoko Yamauchi's assistance, Bromley's passion clearly shone through, because he was again granted the domestic rights to the game – this time in a legally binding sense.

With the *Donkey Kong* saga at an end, the ColecoVision had a game that proved just how powerful the machine was. By this point Nintendo's title had become a worldwide smash. Released in August 1982 and bundled with *Donkey Kong*, the machine would find its way into half a million American homes by Christmas of that year.

Expandability was the key reason for the ColecoVision's admirable performance at retail. "There were two reasons why the ColecoVision expansion slot was carefully placed in the front," explains Bromley. "It was the key to our differentiation from other manufacturer's products. When we showed the 'beauty shot' in our ads we did not need a second picture to show it. It was always there; it promised to take you to exciting, unknown realms. That alone sold a lot of ColecoVision consoles. Secondly, it was a promise that everyone could soon have a real computer just by adding a module to the videogame console."

The ColecoVision Adam was supposed to be this home computer module, but it morphed into a fully fledged machine in its own right. "We created ColecoVision's operating system and the expansion slot connector for, among other things, the Adam computer. It was part of our plans from day one. The Adam was originally a keyboard with a deck that extended about two inches beyond the function keys containing the other computer circuits. It fit snugly against the console at the same height." The Adam's story is too lengthy and remarkable to cover in depth here, but suffice to say that it wasn't the success that Coleco had envisaged. However, the expansion slot was invaluable for other uses.

"We were the first to make home videogames to closely resemble current arcade games," states Bromley. "But if we were to really push that claim, we needed to have a steering wheel controller – complete with gear shift

[ColecoVision] (Below) Coleco's own Cabbage Patch Kids predictably starred in their very own ColecoVision adventure.

ColecoVision Reborn

The ColecoVision may be over 30 years old, but that doesn't mean that games aren't still being cooked up. Thanks to the internet, a solid development community has sprung up and released several notable titles on the console.

"In 2009, *Mario Bros, Pac-Man Collection, Ghost 'N' Zombie,* and *Ghostblaster* were released by homebrew programmers," says ColecoVision Zone's Junior Tétreault. "A new expansion module is planned for some time this year, which will allow more sophisticated games. This will help the ColecoVision community to grow and will encourage people to rediscover the console they played 25 years ago."

Fellow ColecoVision enthusiast Ole Nielsen is an active part of this revival; he's involved in CollectorVision, which is the group responsible for many of the aforementioned new releases. "What appeals to me today is the homebrew games that many talented people have chosen to create," he says. "When the game is finished, they sell them complete with box, label and manual – just like an authentic ColecoVision release." As a gamer who has experienced the machine both in its prime and more recently thanks to its revival, Nielsen admits that it's the console's intrinsic appeal that keeps him coming back for more. "For me, it's still engaging regardless of whether the game is from the early Eighties or is a newer title, which attempts to replicate the experience."

and an accelerator – the ability to attach realistic weapons and the flexibility to match future arcade game controls. The expansion slot was a way to get beyond the 'joystick and button' control system. We also marketed a track ball controller and a 'Super Controller' for boxing and baseball games, which could control four or more objects at once. This was originally designed with 'tactile feedback' – a feature that could not be engineered at the time."

Arguably the most intriguing hardware add-on was a module that allowed ColecoVision owners to effortlessly increase their software library – providing they had owned an Atari VCS previously. "We had one of our better engineers work secretly on a circuit that would render Atari cartridges on the ColecoVision," Bromley recalls.

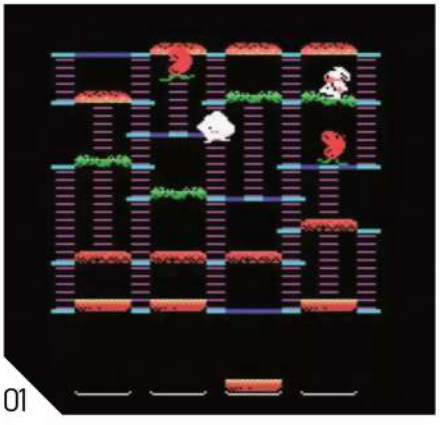
"The idea was if a kid already had those Atari games they could use them on the ColecoVision. This would counteract the parent's mantra: 'But you already have a videogame console.' The kid could say: 'But I can still use my old cartridges.' After several months of development, we finally saw the finished VCS player circuit and it worked perfectly. However, the module was more expensive to build than the actual Atari VCS was to buy. We toyed with the idea of buying Atari chips from one of their secondary suppliers, but that idea was dropped very quickly."

The above promotional flyer details the steering wheel – better known as Expansion Module 2 – and a brief description of what would eventually become the Coleco Adam personal computer system.

Atari took legal action when the module hit the market, but because it was possible to assemble a VCS-compatible device using standard parts, it was ultimately unsuccessful – although a royalty agreement was eventually put in place between the two firms.

Early in 1983, the ColecoVision passed the 1 million sales marker, and had the industry stayed buoyant, Coleco would have almost certainly been in with a chance of becoming the number one hardware manufacturer in the States. Sadly things didn't stay the same; the infamous crash of 1983 put the industry into a nosedive and all of Coleco and Bromley's hard work was ruined. The company staged a retreat from the videogame arena, moving back into children's toys – the most notable range being Cabbage Patch Kids. "They bet on plush, Nintendo bet on electronics and video," says Bromley with a shrug of the shoulders. "Nintendo hung in until videogames took off again, while the Greenbergs instead blamed myself and the other ColecoVision guys for the failure; all the guys who took them in 1976 from bankruptcy to a million-dollar company and in the next eight years to almost a billion." However, even cute fabric babies couldn't save the firm's bacon. "It only took a couple of years after we left to get back to bankruptcy," Bromley comments. "If Coleco hadn't given up on videogames – crash or not – it would have been here today instead of Nintendo."

PERFECT TEN GAMES



01

BURGER TIME

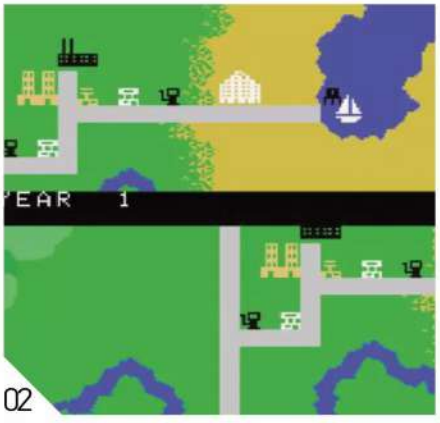
» **RELEASE:** 1984
» **PUBLISHER:** DIGIMAX
» **PRICE:** £10+
» **BY THE SAME PUBLISHER:** DEFENDER

01 One thing that constantly impresses with the ColecoVision is the sheer number of excellent arcade ports that are available for it. Coleco's port of *Burger Time* is easily one of its best, and the end result is an incredibly faithful conversion of the cult arcade coin-op. Animation throughout is superb, with the large, well-animated sprites rarely suffering from flickering, while the gameplay is extremely close to its arcade parent. Pete doesn't feel quite as fast as he did in the original game, but a choice of four difficulty levels and excellent, tight controls ensure that *Burger Time* will be a game that you'll constantly find yourself returning to. Highly recommended.

FORTUNE BUILDER

» **RELEASE:** 1984
» **PUBLISHER:** COLECO
» **PRICE:** £40+
» **BY THE SAME PUBLISHER:** MOUSE TRAP

02 Predating *SimCity* by a good five years, *Fortune Builder* is a polished sim that proves that there was more to Coleco's machine than just arcade conversions. Initially you're presented with a large space of land, but you're soon able to build a staggering range of items, ranging from simple roads to apartments and even casinos. The aim is to ensure that your city reaches a certain value, but your success can be hindered by random events like rampaging termites. For all its addictiveness, *Fortune Builder* really comes into its own with the addition of its insanely polished two-player mode that allows you to compete or work together in order to make the best city.



02

GORF

» **RELEASE:** 1983
» **PUBLISHER:** COLECO
» **PRICE:** £7+
» **BY THE SAME PUBLISHER:** ILLUSIONS

03 As with every other official port of Jamie Fenton's coin-op, the ColecoVision version is missing the '*Galaxians*' stage. That omission aside, this is nevertheless an excellent arcade port and is miles above anything on similar consoles at the time. It's missing the cool speech from the original, but otherwise the sound is strong, mimicking its arcade parent. Visually it's also impressive, with well-detailed sprites that perfectly capture the spirit of the arcade hit. Best of all, though, is the gameplay. Yes, the missing stage is a pity, but the excellent collision detection and controls certainly make up for it.

TURBO

» **RELEASE:** 1982
» **PUBLISHER:** COLECO
» **PRICE:** £20+
» **BY THE SAME PUBLISHER:** MR DO!

04 The astonishing *Turbo* can only be played with the ColecoVision's steering wheel controller. With that caveat out of the way, let's examine one of the machine's most impressive games. While not a racing game like other titles on the system – you're simply rated on how many other cars you pass – *Turbo* remains one of the best examples of the genre. Not only is the sense of speed sensational, but the graphics are phenomenal, with huge buildings that other racers of the time could only dream of. An unforgettable experience and easily one of the ColecoVision's best ports.

RIVER RAID

» **RELEASE:** 1984
» **PUBLISHER:** ACTIVISION
» **PRICE:** £13+
» **BY THE SAME PUBLISHER:** PITFALL!

05 Activision released plenty of its Atari games on the ColecoVision, with many of them being superior to the 2600 versions. *River Raid* is no different, and even after a quarter of a century, this port remains brilliant fun. The sprites are more refined, the scrolling is smoother and everything feels that little more polished. Ultimately, however, it's the enduring gameplay that grabs you, and *River Raid*'s blend of strategic shooting – blowing up fuel barrels gives you points, but reduces the available fuel – and hectic blasting ensures that you'll never become bored of it.

03

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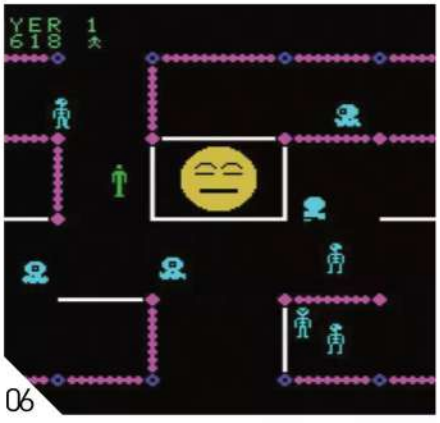
If you want excellent arcade ports and original content, this really is a console you should own



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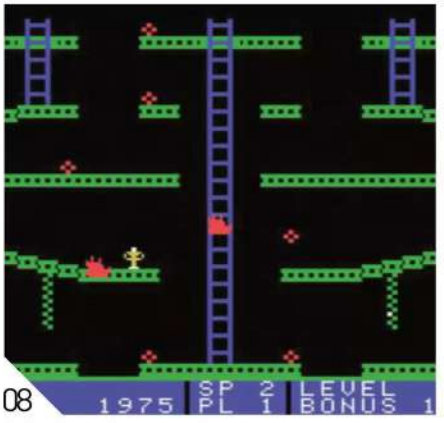


08

FRENZY

» **RELEASE:** 1984
» **PUBLISHER:** COLECO
» **PRICE:** £13+
» **BY THE SAME PUBLISHER:** LOOPING

06 *Frenzy* wasn't ported to many home systems, but the ColecoVision version really is an impressive port. The controls are responsive, allowing you to navigate each room with ease, and collision detection is as tight as a proverbial drum, while the AI ensures that you'll find plenty of challenge. Graphically it delivers thanks to a minimum amount of flicker, authentic sprites and solid animation of the lead character. Ultimately, though, it's *Frenzy*'s frantic gameplay that will keep you returning. Another great game that shouldn't be missed under any circumstances.

WARGAMES

» **RELEASE:** 1984
» **PUBLISHER:** COLECO
» **PRICE:** £20+
» **BY THE SAME PUBLISHER:** SUPER ACTION FOOTBALL

07 With so many great arcade ports, it's refreshing to add an original ColecoVision game to the list. The nearest descendent to *WarGames* is Atari's *Missile Command*. The difference here, however, is that you're defending the United States, and you have to nip between each section and see off the incoming missiles. The end result is an amazingly hectic experience that really cranks up the tension as you desperately try to fend off tough waves of warheads. The aesthetics are fairly simplistic but you'll be having so much fun that you won't care.

JUMPMAN JR

» **RELEASE:** 1984
» **PUBLISHER:** EPYX
» **PRICE:** £15+
» **BY THE SAME PUBLISHER:** GATEWAY TO APSHAI

08 Yes, the conversion of *Donkey Kong* is impressive, and yes, *Miner 2049er* is extremely polished, but this superb effort is definitely our favourite ColecoVision platformer. The visuals are pretty uninspiring, but it matters not as the frantic gameplay is absolutely sublime. There are 12 stages to make your way through as Jumpman bounds across each stage in his pursuit of bomb. It may not be the most jaw-dropping-looking ColecoVision title, but in terms of gameplay it's virtually unmatched and a must for platform fans.

09

PEPPER II

» **RELEASE:** 1983
» **PUBLISHER:** COLECO
» **PRICE:** £10
» **BY THE SAME PUBLISHER:** Q*BERT

09 Think of a cross between *Pac-Man*, *Qix* and *Amidar* and you'll have something in your mind's eye that quite possibly resembles *Pepper II*. A port of Exidy's 1982 coin-op – we've no idea what happened to the original *Pepper*, or if it even existed – each screen is full of mazes and enemies and is highly reminiscent of Konami's excellent *Amidar*. The difference, however, is that if you re-cross a line you've re-painted it will open up again, which adds a great level of strategy to proceedings and is further enhanced by the fact that you can actually play across four different stages at the same time. Yes, it's another arcade port, but another we heartily recommend.

DONKEY KONG JR

» **RELEASE:** 1983
» **PUBLISHER:** COLECO
» **PRICE:** £10
» **BY THE SAME PUBLISHER:** DONKEY KONG

10 *Donkey Kong* may have been a pack-in and a huge success for Coleco's marvellous machine, but we actually prefer *Donkey Kong Jr.* It's missing one of the levels from its arcade parent, but this is another predictably good arcade conversion that has you scaling chains as you try to rescue your dad from an irate Mario. Gameplay is extremely smooth; the large visuals do a great job of capturing the cartoony sprites of the arcade original, while spot-on collision detection means that you'll never lose a life unless you messed up yourself. It's not quite arcade perfect, but this is another cracking conversion that leaves the Atari 2600 effort on the starting blocks.

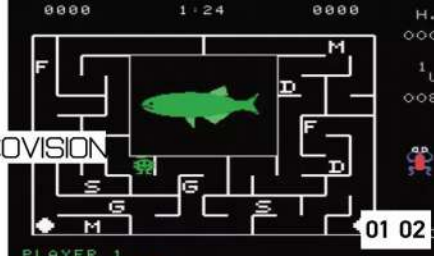
10

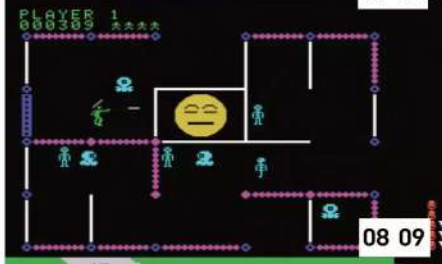
COLECOVISION

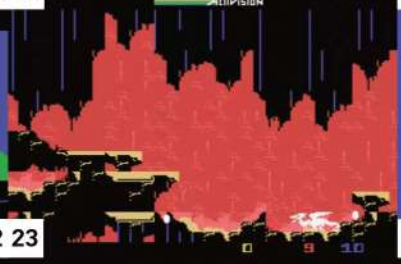
COLECOVISION and the rest...

A powerhouse when it came to spectacular arcade conversions, Coleco's machine also boasted plenty of original games. Here are just a few of its best...

01 ALPHABET ZOO
02 FRANTIC FREDDY
03 SLURPY
04 TUTANKHAM
05 BOULDERDASH
06 DONKEY KONG JR
07 MOONSWEEPER
08 FRENZY
09 BURGER TIME
10 MR DO!
11 2010: A GRAPHIC ACTION GAME
12 FROGGER
13 DEFENDER
14 CHUCK NORRIS SUPERKICKS
15 PITSTOP
16 H.E.R.O.
17 MONTEZUMA'S REVENGE
18 TIME PILOT
19 EVOLUTION
20 TOURNAMENT TENNIS
21 GYRUSS
22 VICTORY
23 WING WAR
24 BEAM RIDER
25 GORF
26 CARNIVAL
27 JUNGLE HUNT
28 Q*BERT
29 THE HEIST
30 ANTARCTIC ADVENTURE
31 SMURF: RESCUE IN GARGAMEL'S CASTLE
32 GALAXIAN
33 VENTURE
34 LADY BUG
35 TAPPER
36 WAR ROOM
37 BUCK ROGERS: PLANET OF ZOOM
38 DANCE FANTASY
39 MOTOCROSS RACER
40 ILLUSIONS
41 POPEYE
42 SPY HUNTER
43 UP 'N DOWN
44 JAMES BOND
45 CHOPLIFTER
46 ROBIN HOOD
47 BC'S QUEST
48 KEYSTONE KAPERS
49 AQUA ATTACK
50 TOMARC THE BARBARIAN
51 AMAZING BUMPMAN
52 MINER 2049ER
53 WIZARD OF ID'S WIZ MATH
54 ARTILLERY DUEL
55 CABBAGE PATCH KIDS: ADVENTURES IN THE PARK
56 DONKEY KONG







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GAME BOY

It's been 30 years since the world first glimpsed the Game Boy, the creation of veteran designer Gunpei Yokoi and his team at Nintendo. To celebrate its birthday, we took a look at that most modest of handhelds and find out what made it such a massive success

It's often said that there are no surprises in gaming anymore. In this connected age we now know everything, instantly. The days of walking into a shop and being blindsided by new gaming hardware and software are dead and gone.

But things haven't really changed that much. It was just less immediate in the past, with gamers having to rely on magazines drip-feeding information about exciting new products. This was certainly the case with the Game Boy, the Nintendo handheld that launched in Japan in April 1989 and the US shortly after but wouldn't arrive in Europe until September 1990. The long-running and respected UK magazine *Computer & Video Games* dropped the first details in its May 1989 issue, calling Nintendo's new machine a "micro-marvel". There was a product image too, allowing readers to scrutinise its key characteristics: the D-pad and button configuration, the grey-coloured shell, the yellowy-green screen. Displayed on the screen was a little something called *Super Mario Land*.

It wasn't possible to judge the size however. There were no hands gripping the Game Boy for comparison. All was revealed in the July 1989 issue of *C&VG* when deputy editor Julian Rignall got his own hands on a Japanese Game Boy for an import review. "There's a new Nintendo console in town," wrote Jaz. "It fits comfortably in the palm of your hand, has its own tiny TV screen, and the games come on cartridges the size of a matchbox. Sounds too good to be true?"

Happily Jaz revealed that the Game Boy was not just real but rather quite brilliant. "The console fits in your hand perfectly," he remarked. "Playing games on it is a joy!" While he praised the sharpness of the graphics on the LCD screen, he did note blurry scrolling as a caveat. It was revealed that the handheld was powered by four AA batteries, but no mention of how many hours of play they offered (clearly Jaz wasn't changing them often enough for it to be regarded as an issue). Meanwhile, key Japanese launch title *Super Mario Land* was described as "unbelievably addictive". The review ended with some impressive sales claims from Japan – 500,000 units sold to date, with 300,000 snapped up at launch. Elsewhere in the issue the Game Boy was called "The future of handheld gaming". As Jaz's review was a UK exclusive you could forgive *C&VG* for laying it on thick, yet that statement would turn out to be beautifully prophetic. ▶

OFF-ON
DOT MATRIX WITH STEREO SOUND
SCORE
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LEVEL
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LINES
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BATTERY
Nintendo GAME BOY™
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PHONES

"I found the Game Boy to be a very simple and easy machine to code for"

R-Type II programmer Bob Pape

When the Game Boy finally arrived in Europe, almost 18 months after its Japanese debut, there were just half-a-dozen games released alongside it. Of these, *Super Mario Land*, *Tennis* and *Golf* were the must-have titles. One title you didn't have to buy was the revelatory Game Boy version of *Tetris* as it came bundled with the console. This smart move had worked wonders for Nintendo in the US, leading to stellar sales (a reported million units were sold within weeks of its launch). European gamers could now dream of falling blocks too as *Tetris* fever took hold. It really was the perfect pack-in – the ultimate game on the go.

The success of the hardware quickly led to a flood of fresh software that identified the Game Boy as a diminutive yet capable contender that could punch above its weight (which was a lean 300g including batteries, if you were wondering). In its first couple of years the handheld was home to some fantastic original titles such as pinball sim *Revenge Of The 'Gator*, platform adventure *Gargoyle's Quest*, and the Game Boy exclusive sequel *Metroid II: Return Of Samus*. There was also plenty of decent and undeniably attractive licensed fare like *Teenage Mutant Ninja Turtles*, *RoboCop* and *Batman*. Coin-ops were converted too with varying results, as you might expect, although *Double Dragon*, *Nemesis* and *R-Type* were all admirable attempts.

The Game Boy's custom processor, which was essentially a Z80 with some bits missing and others added, ensured that many programmers could move over to the machine with little problem. Bob Pape, who coded the celebrated Spectrum version of *R-Type*, went on to develop *R-Type II* for the handheld. "I found the Game Boy to be a very simple and easy machine to code for," he says. "The hardware of course had limitations but then that was the same for all early 8-bit consoles and computers. Some people may have had problems dealing with the limited instruction set of the custom Sharp processor that the Game Boy used, compared to the Z80, but I think for those programmers who were used to having to scratch for every last byte out of a 1K ZX81 or 48K Spectrum through tight coding then it was almost like coming home."

In the past Nintendo has been accused of providing developers with vague or incomplete documentation, but in Bob's experience this wasn't too much of an issue as the hardware was pretty much an open book. "Well if you don't know what's missing then you can't say it's not there!" he comments. "It's more likely that certain coding techniques were kept quiet to give companies an edge, things like how to multiplex the sprites or give the appearance of seven shades of grey. Other ways of programming the hardware were so obvious they didn't need documenting."

Another Z80 developer who gladly moved over to the Game Boy was Ken Murfitt. "In many ways the Game Boy was easier to program that the other Z80 platforms," says Ken, who came chiefly from a Amstrad CPC background and developed *Double Dragon 3* and *The Lawnmower Man* for the Game

» You won't get very far without using these.

MUSCIAL INTERLUDE

Jonathan Dunn composed for many Game Boy titles, including the RoboCop theme used on that washing machine advert...

» Music man Jonathan Dunn.

What were your immediate thoughts on the Game Boy as a gaming platform?

When I first tried a Game Boy I thought it was a great little device. Of course the first thing I played was *Tetris* and I was hooked. I also remember that you could connect two Game Boys together and play two-player *Tetris*. That was the first time I'd seen anything like that.

How would you rate the Game Boy's audio capabilities?

The Game Boy had some interesting characteristics. It had a waveform that you could program yourself – 32 4-bit samples that you could define. I remember getting it to make some unusual noises. I also liked the fact that you had some control of stereo

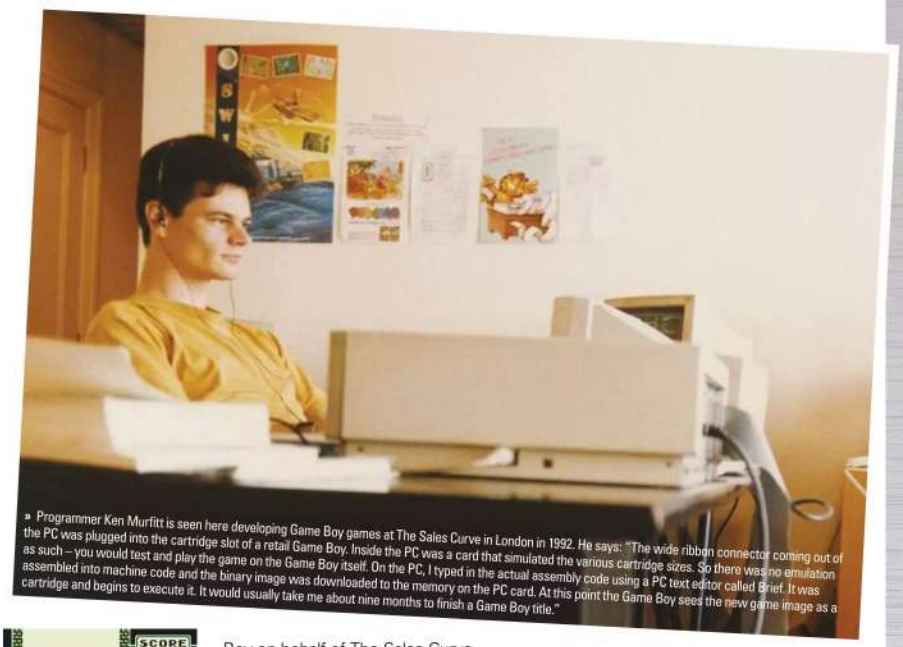
» [Game Boy] *RoboCop*. Great game, superb soundtrack.

placement, though I wish I'd used that a bit more in the work I did. Quite often the stuff I did for the Game Boy was a port from another version so I didn't get to spend enough time experimenting with the possibilities.

Did you encounter any technical challenges at all?

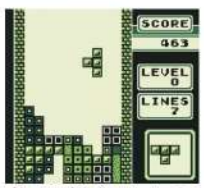
I coded my own driver for the C64 and NES and SNES, but at the time didn't have enough knowledge of Z80 to do the audio driver that we needed. So Ocean's John Brandwood was roped in to convert the Spectrum driver, with a few modifications. I wasn't happy with the hardware volume envelopes, so I got John to add a more versatile software envelope system that gave me more accurate control. It had disadvantages as we effectively reduced the bit resolution of the volume, but it did allow me to sync the envelopes with other note-based events.

Your *RoboCop* title theme is still used and sampled to this day.



» Programmer Ken Murfitt is seen here developing Game Boy games at The Sales Curve in London in 1992. He says: "The wide ribbon connector coming out of the PC was plugged into the cartridge slot of a retail Game Boy. Inside the PC was a card that simulated the various cartridge sizes. So there was no emulation as such – you would test and play the game on the Game Boy itself. On the PC, I typed in the actual assembly code using a PC text editor called Brief. It was assembled into machine code and the binary image was downloaded to the memory on the PC card. At this point the Game Boy sees the new game image as a cartridge and begins to execute it. It would usually take me about nine months to finish a Game Boy title."

» [Game Boy] *Tetris* was the Game Boy's killer app. It was the perfect fit for the new handheld.



» [Game Boy] *Tetris* went on to sell millions, benefiting nicely from being a pack-in title.

Boy on behalf of The Sales Curve. "It was exciting to use real sprite and background-scrolling hardware, after so many years of squeezing every last instruction out of platforms like the CPC and Spectrum. No more pre-shifted sprites that hog memory, sprite masking or the Z80 stack tricks required to perform background scrolling. You could just set up the sprite buffers one time and scrolling hardware registers once per frame and go. Obviously it was a step backwards in terms of colour count – there were four levels of grey against the Amstrad's palette of 27 colours. You could get in-between greys using flickering but it was visually distracting and so I preferred dithering."

So developing for the Game Boy wasn't particularly difficult for seasoned programmers, but Ken notes there were a couple of unexpected considerations. "The first was battery life. The processor was put to sleep using the HALT or STOP command after processing had been completed for a frame, and this would minimise battery drain until the next vertical blank, 60 times per second. It was surprising to me at the time that the battery life could be extended by saving power during these tiny slices of CPU down time."

And then there was the odd entity known as 'Version Zero Game Boy'. Ken explains: "There were these early production Game Boys of which only a few thousand units existed in the world and Nintendo insisted that any submitted title must run perfectly ▶

Does its continued popularity ever surprise you?

I don't think anyone could have guessed that the *RoboCop* theme would become so memorable. At the time it was just another game. It was the norm to produce stuff very quickly and there was always another project looming at Ocean, so you didn't really get time to think about it. If I look back at all the different versions of the same piece of music I had to do, I wonder how I did it. That tune in particular has been sampled a lot and it's great that it's still around.

Do you receive any royalty payments when the *RoboCop* tune is used?

I now collect writer royalties whenever the track is used, though I didn't receive anything when it was used in the Ariston advert. I think Ocean thought it was just getting some free PR and marketing.

What are you up to these days?

For the last two years I've been living in Slovenia working as COO for a games company called IBZooT. I'm also the co-founder of Fatleg Games, a mobile games start-up. I still code, I still write music. It's fun to make small games for mobile. It feels a little like it did in the old days. You don't need massive teams to produce something fun.

» [Game Boy] *Hook* was another game that benefited from Jonathan's music.

» Not just any old Game Boy. This one, owned by our very own Paul Drury, bares the signature of Alexey Pajitnov.

GAME BOY BOLT-ONS

Some of the not-so-silly accessories you could buy for your Game Boy

BATTERY PACK

■ Not the most exciting accessory, or most essential seeing as the Game Boy was the least power-hungry handheld. But when your AAs did finally give up, this add-on was good for up to ten hours of extra play. And if you were more likely to be found playing Game Boy at home, it also doubled as a handy AC adapter.

GAME LIGHT

■ The Game Boy was unplayable in low-light conditions so there was no shortage of third-party add-ons designed to brighten up the display. The Game Light from Nuby was one such solution that bolted on to the front of the screen. It required four AA batteries so it was probably cheaper to find a decent light source instead.

AMPLIFIER

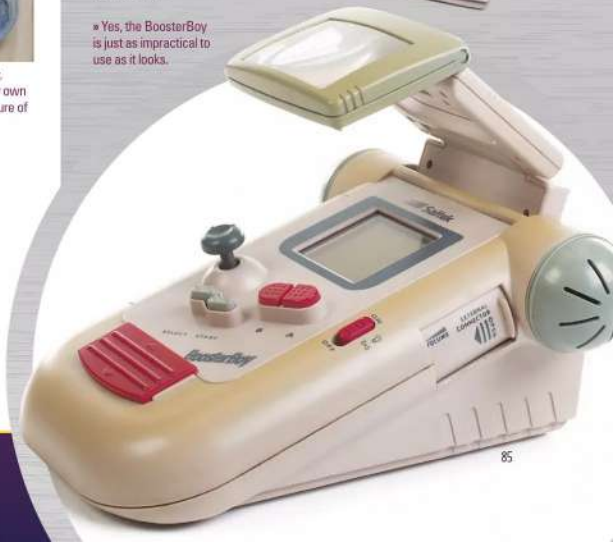
■ Another accessory from Nuby, this device plugged into the headphone socket at the bottom of the Game Boy and boosted the audio output. Sound was louder and also in stereo. With so many ridiculous-looking add-ons available for the Game Boy, this one deserved points for at least trying to match the Game Boy's style and form.

GB CAMERA

■ This quirky add-on was released in 1998 and turned the Game Boy into a compact digital camera (shortly before digital cameras became commonplace). In addition to snapping and reviewing photos, there were a number of built-in 'games' that would feature the player's grinning mug. They were borderline terrifying in all honesty.

GB PRINTER

■ If you had a burning desire to print the grainy, black and white photos you'd taken using the GB Camera then you clearly coveted this tiny thermal printer. Otherwise, a bunch of games supported the device, allowing you to print out high scores, screenshots and the like.



» Yes, the BoosterBoy is just as impractical to use as it looks.

» [Game Boy] Capcom's *Gargoyle's Quest* was a fun spin-off from arcade hit *Ghosts 'N' Goblins*.

» [Game Boy] If there was a craze then it was all over the Game Boy. There were three *Turtles* games in total.

» If you want to play multiplayer games or use peripherals you'll need this port.

> **"Nintendo created games that worked well on a small screen with no colour"**
>
> Graphics artist Elliot Curtis

▶ on them. The difference was that the video memory was slightly slower in some respect and problems would be apparent with partially scrambled background tiles appearing in your game due to memory contention. It was a shame because it further restricted how many background blocks you could update during the video blank.

Due to the Game Boy's small screen and limited colour palette, it was the job of artists to ensure that the graphics, and in particular sprites, were as clear and defined as possible. It was a challenge that Elliot Curtis relished. Working for Tiertex Design Studios, he created Game Boy graphics for various Disney licences and *FIFA* entries. "To be offered the chance to make games on a console was a dream," he says. "Yes the Game Boy was limited but the other consoles at the time were actually a bigger struggle to create graphics for. The first time you created a sprite and saw it running on a Game Boy screen was amazing. It always looked way better than it did in Deluxe Paint!"

The biggest headache occurred when creating full-screen images, such as title screens, due to display limitations. "A Game Boy screen is divided into an eight-by-eight grid and each square in that grid is a character," he explains. "When you create a full-screen picture you can actually only use about 21 unique characters. It was nowhere near enough. We had tools from the coder to highlight individual characters once we drew anything, and then we had to be creative by using flipped and rotated characters within the picture. It's always depressing butchering a nice picture but often it was required assets for a licence and there wasn't any scope for creativity. Publisher or licence logos are boring enough to draw without spending all day editing them to make them actually work on the screen."

Elliot's later games were specially optimised for use with the Super Game Boy, the device that enabled Game Boy carts to be played on the Super Nintendo console, often with added colour. Explaining the process, Elliot says: "Colour would be designed into the graphics from the start. I would have four separate palettes of four colours each. I used to work on the Spectrum so the eight-by-eight character colour issues weren't new to me, but Super Game Boy graphics were a pain. The number of people who were ever going to actually see them was so small it seemed like a bit of a waste of time. I actually put a footballer in the border for *FIFA 98* in a Watford strip and got away with it!"

Super Game Boy games at least looked better in magazines – as anyone who tried to screen-grab original Game Boy titles will tell you. Nick Walkland worked on Europress's *GB Action*, the UK's first dedicated Game Boy

» [Game Boy] Bob Pape's *R-Type II* conversion was an improvement over its already fantastic predecessor.

» [Game Boy] Street brawler *Double Dragon 3* supported cooperative play on the Game Boy.

MULTIPLAYER ON THE MOVE

You had a Game Boy. Your friends had Game Boys. Game on!

Two Game Boys could be connected together using the link cable that was initially bundled with the handheld. Conveniently, pack-in title *Tetris* included a fantastic two-player mode where players battled it out as Mario and Luigi. It was simple but genius and elevated *Tetris* to even greater heights.

As most Game Boy owners had a cable, lots of titles included two-player support. Sports titles like *Tennis* and *Golf* offered gentle competition while fighting games such as *Mortal Kombat* and *Killer Instinct* let you go toe-to-toe with a pal. The two *Double Dragon* sequels allowed you to team up with a friend and clean up the streets together.

» [Game Boy] 'Epic' is not a word you'd ever associate with Game Boy games, but *Link's Awakening* came pretty close.

magazine which debuted in 1992. "Game Boy games were a complete pain to screen-grab," says Nick. "We actually took photos because it was so tricky. The Game Boy was placed in this glorified cardboard box, with a black cloth around the entrance, which you put your head inside. Like a Victorian snapper but without the phosphorous flash. But there was always motion blur and when you tried to pause games they tended to come up with a pause screen. To make matters worse the Game Boy looked, well, awful. A bland greeny-grey, with shades in-between."

Nick is not alone in his lack of love for the Game Boy. "It was awful!" laughs Ed Magnin, a programmer who'd previously worked for MicroProse and Cinemaware on Apple II and IIGS software before moving onto the Game Boy at Virgin Games. "The processor was like a Z80 but it wasn't a complete one, and there were banks of memory and the memory had to be switched in and out. So if you had a piece of artwork it wasn't just a question of whether it would fit into the cartridge, but where you had a hole to put it where it wouldn't straddle banks. You know, up until the Nintendo DS, I've always said that it was our job as programmers on Nintendo platforms to make bad technology look better than it should have."

Despite his aversions, Ed was responsible for the fantastic and faithful Game Boy version of *Prince Of Persia*. For this he also had to contend with Nintendo's famously dim view on videogame violence. "Nintendo had these policies where no-one ever died in a Nintendo game," he says. "So for *Prince Of Persia* the first thing we looked at was the slicer. We raised this and Nintendo said it was okay as long as we didn't show any blood. Even on the Game Boy they didn't want a big black puddle oozing out! The pop-up spikes on the floor were also a problem. Years later I found out that Nintendo didn't like what it called 'body deforming violence'. It was okay to get killed but not have the spikes popping out of your back."

For Ed and other developers, whether they were fans of the hardware or not, it was clear that Nintendo had devised a hugely popular platform. The Japanese firm had hit gold with the Game Boy. "It was my daughter who actually got me started on Nintendo," says Ed. "She was in kindergarten and I was out of work as the company I'd just finished a game for had gone out of business. It was hard to find a job and my daughter said 'Dad you should be doing Nintendo!'. And she was right. All of the kids had one!"

"I WANNA BE THE VERY BEST" How the sales of two huge hits stacked up

The Game Boy quickly established itself as the world's number one handheld, and this was in the face of competition from rival machines that arrived shortly after. The Atari Lynx, Sega Game Gear and PC Engine GT (TurboExpress), with their colour screens and superior hardware, looked like a clear generational leap over the Game Boy. It really was men against boys, on paper at least. But the Game Boy subverted expectations and emerged as the clear winner.

The reasons for its success are fourfold. Firstly, the Game Boy was the fastest to market so it was the first portable to capture the interest and imagination of the public. And not only was it first but it was the least expensive too. Prices obviously varied from region to region, but in anyone's language the Game Boy undercut the competition significantly. Further discounting would push the Game Boy towards an impulse purchase price point. The third factor was battery life. Four AA batteries would power the Game Boy for up to 15 hours (and possibly longer if the speaker wasn't too troubled). Rival handhelds were much hungrier, requiring more batteries and exhausting them far sooner. Having to continually buy or recharge batteries was never ideal.

Finally, and crucially, there was the Game Boy's vast library of games. More than 700 titles were released over a period of ten years. Third-party production was plentiful and Nintendo itself continued to support the machine throughout its lifespan. Three *Super Mario Land* sequels appeared in 1992, 1994 and 1998, while the release of *The Legend Of Zelda: Link's Awakening* in 1993 showed that the Game Boy could deftly entertain sprawling adventure games. There was a brace from ▶

» Hear the Game Boy's music in all its glory. Or cover it with your hand.

» There's no back light on the original Game Boy, so adjusting the contrast is a must.

» The On button for the Game Boy also acts as a very handy cartridge lock. Not like they'd fall out...

Double Dragon 3 programmer Ken Murfitt reveals that developing co-op play was tough. "There were some interesting lessons," he says. "It required the efforts of myself and another programmer, Tom Prosser, to test the game – you couldn't flush out all of the synchronisation bugs by yourself. I learned about packets and timing issues. For example, no two Game Boys run at exactly 60Hz – one will be slightly slower. This may sound obvious now but you could not rely on only the vertical blank to synchronise your two-player game."

One of the most popular uses of the link cable was transferring Pokémon between the Red and Blue versions (if you were determined to catch 'em all then linking was mandatory). Battles could be staged between collectors too. A special four-player adapter was also available, although it was only supported by a small number of games. Notable titles included *F-1 Race* (with which the adapter was bundled), *Super RC Pro-Am* and *Gauntlet II*. A mention must also go to *Faceball 2000*, a Game Boy FPS that included support for up to 16 players!

» *Prince Of Persia* programmer Ed Magnin gets to grips with the Game Boy Advance.

» *Donkey Kong* (1994) featured enhanced graphics and a retro border when played on the Super Gamer Boy.

» [Game Boy] In *Gauntlet II*, four players could work together – just like in the arcades.

▶ everyone's favourite gorilla too, with the arrival of *Donkey Kong* in 1994 and the first of Rare's *Donkey Kong Land* games in 1995. And just when the Game Boy was starting to look tired, along came *Pokémon* in 1996. The *Pocket Monsters* phenomenon ambled its way West over the next few years and gave the Game Boy a shot in the arm.

Nintendo would refresh the hardware too. The Game Boy Pocket arrived in 1996, sporting a sleek new form and clearer LCD screen. This was followed by the Game Boy Light in 1998, a Japanese exclusive that featured a backlit screen. The long anticipated colour screen Game Boy arrived later in the same year and effectively replaced the original model. Prior to the release of the Game Boy Color, Nintendo revealed that the original Game Boy had sold in excess of 64 million units worldwide.

For graphics artist Elliot Curtis, the key reason why the Game Boy was such a sales success in the face of 'superior' competition was down to its gaming library. "It was Nintendo so it had the best games," he says. "Obviously *Tetris* shifted the units in the first place, but then you could also play *Mario*. Nintendo created games that worked well on a small screen with no colour. Everybody else seemed to be making versions of existing games that were inevitably inferior to the 'proper' version."

Programmer Ken Murfitt agrees: "Something that Nintendo understood well was that consumers enjoy straightforward products that are accessible, robust and low cost, but if I had to sum up the success of the Game Boy in one word it would be 'Tetris'."

Having experienced the Game Boy before most, Jaz Rignall is ideally placed to comment on how it held up over time. Despite the arrival of flashier portables, his appreciation of the Game Boy did not diminish. "If anything, the more I played the competition the better Nintendo's little grey brick looked," he says. "Anything with a colour screen ate batteries as fast as you could shovel them in. The Game Boy was relatively frugal, making it much friendlier on the pocket, energy-wise. It was also nicely designed. These days it looks hefty, but you could hold it and play it for hours comfortably. It was also built like a tank. The Lynx and Game Gear were fragile by comparison. I never had any qualms about bunging it into a bag and taking it anywhere. I loved the PC Engine GT but it was expensive, and some of its games were unplayable because they'd been designed for a big screen. It was also one of the all-time greats for consuming batteries. Ultimately it's about the games and not the tech, and the Game Boy proved that. It had a range of really fun carts – and *Tetris* was a killer app."

Jaz also notes the importance of handhelds to Nintendo's business over the years – from the Game Boy through to the Game Boy Advance, DS and now 3DS. "Just one look at Nintendo's numbers show how much revenue handhelds have brought in. The importance of those numbers has varied from generation to generation, but when Nintendo's flagship console hasn't done so well, handheld success has been critical. The 3DS is a good example of that. Remove its figures from Nintendo's financials from last year and things would be looking pretty dismal."

So what now for Game Boy? When the DS was introduced in 2004, Nintendo made it clear that the Game Boy name was not being retired. Given the firm's current success with the Classic Mini consoles, there's a possibility we may see a new Game Boy at some point. Imagine a stripped-down handheld designed specifically for playing retro games – essentially a portable Virtual Console with access to not just Game Boy games, but titles from those rival handhelds that once tried to outmuscle the Game Boy. That would be a nice surprise.

Special thanks to Warez, Bournemouth (retrowarez.co.uk) for its help with this feature

» Look away now Nintendo! The Prince attempts to pass a deadly slicer.

Nintendo GAME BOY TM
PROGRAMMING MANUAL & CODEBOOK
PORTABLE
GAME GENIE
VIDEO GAME ENHANCER
For the Nintendo Game Boy Compact Video Game System
Unlock the power of your favourite video games!
DOUBLE DRAGON

NINTENDO'S HANDHELD HERITAGE

An essential timeline to gaming on the go – Nintendo style

GAME & WATCH: 1980 ONWARDS

1989

GAME BOY

1998 | 1998 | 1996

GAME BOY COLOR

GAME BOY LIGHT

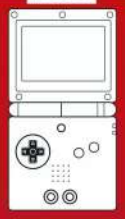
GAME BOY POCKET

> "The more I played the competition the better Nintendo's little grey brick looked"
>
> Games journalist Jaz Rignall

GAME BOY ADVANCE

2001 | 2003 | 2005

GAME BOY ADVANCE

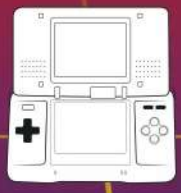


GAME BOY ADVANCE SP

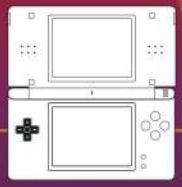
GAME BOY MICRO

NINTENDO DS

2004 | 2006 | 2008 | 2009 | 2011 | 2012 | 2013

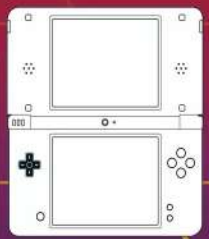


NINTENDO DS



NINTENDO DS LITE

NINTENDO DSi

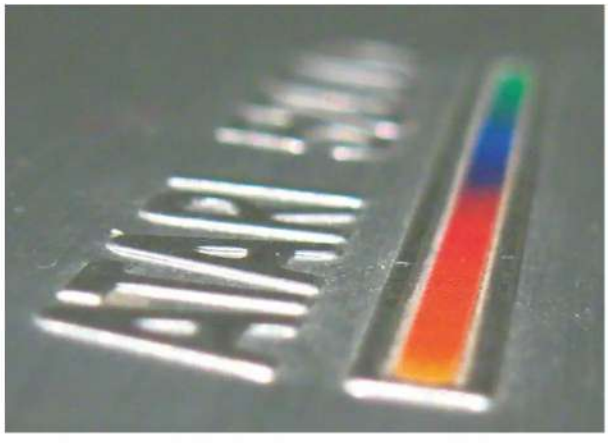


NINTENDO DSi XL

NINTENDO 3DS

NINTENDO 3DS XL

NINTENDO 2DS



Launched in 1982 as Atari's high-end system to bring the full arcade experience to the home, the 5200 instead turned into Atari's two-year detour on the way to the release of the 7800. We reveal all

ATARI 5200

Release Info:

- **Year released:** 1982
- **Original price:** $299.95
- **Associated magazines:** *Atari Age*, *Antic*
- **Buy it now for:** $30-$100

The Atari 5200 may be unfamiliar to UK gamers, as it never saw a PAL release. What should have been the system to bring Atari into the Eighties, had it been released when originally proposed in the late Seventies, instead became a long and winding path to missed opportunities and bad execution. Stepping into the 5200's internal design gives the key to its origins and sheds some light on the troubled path it took as a concept and design, before it was finally released to market in October of 1982. Internally, the 5200 is an Atari 400 PCS (Personal Computer System) – the lower-end machine of Atari's late Seventies/early Eighties computer line – which is not a random fact being thrown at you when you take into account how the 400 was initially proposed.

Codenamed 'Candy', the Atari 400 was initially meant to be a lower-end game console to complement the higher-end 'serious' computer, codenamed 'Colleen'. The vision of the design team leader, Jay Miner, the new game console was to replace the team's previous console, the Atari 2600. Miner's idea was to leverage the new custom sound and graphics chips that they were designing, for a console with a keyboard directly on it, the idea being that game programmers would be able to develop right on the console itself, rather than the then-arduous process of developing on 6502 simulators running on time-sharing mainframes and then burning the games to an EPROM to test on the real thing.

As team member Joe Decuir recalled: "We knew we would need to leapfrog the 2600 before somebody else did. It had to support home computer character and bitmap graphics. We saw the Apple II, Commodore, and Radio Shack appliance machines coming."

The 2600's time being limited was echoed by the slow sales that 1978 Christmas season and the rallying cry of Atari head at the time Nolan Bushnell. Bushnell thought that, much like Atari's previous plethora of *Pong* machines, the 2600's time on the market was limited to around two years before the company had to introduce a new console. It was the same gut instinct that he had gone on since the early coin-op days of Atari, when to stay ahead of the 'me too' competitors it had to continuously innovate and release new machines or fall behind. Unfortunately – or fortunately, depending on how you look at it – Atari was a Warner Communications company now and not a private game-engineering firm. Warner's vision was one of stability for its company, and getting better sales out of its products on the market at the time. It was a time when Atari itself was tanking, going from profits of $40 million in 1977 to what would be just $2.7 million in 1978. Bushnell being an absentee manager popping up with random directions and epiphanies didn't help, and in February 1978 Warner brought in a consultant to help make the company profitable again: Ray Kassar. Kassar and Bushnell spent the rest of 1978 butting heads, and Bushnell's stand at the Warner budget meeting that November would be his last. Getting in a shouting match with Warner's heads over drastically reducing the price of the 2600 to move it faster, they realised that he had to be completely taken out of the loop. After a feeble attempt to retain control of Atari by having a management meeting with Warner executives left out, the parent company decided to put Bushnell out to the corporate pasture, forcing him to retire.

By 1979, Kassar was in charge, and he put in place the idea to market the 2600 year-round, in direct opposition to Bushnell's plan – something executives at other videogame companies had been calling for since early in 1978. Atari also licensed the smash arcade hit *Space Invaders*, which, when released in 1980, gave the 2600 the shot in the arm it needed, and Atari was back up to $80 million in profits for that year. Kassar also put into place his vision for Atari's new computer, and in the process axed the idea of a replacement for the 2600. Kassar's vision for Atari's computer line was coloured by his former position at the textile manufacturing

» This planned deluxe controller featured an arcade-style trackball, for the full experience in the home.

» The inclusion of the ageing and unimpressive *Super Breakout* as the console's pack-in raised eyebrows.

company Burlington Industries. Targeted towards mass consumer products like towels, carpets, and other woven products, Kassar felt his experience at Burlington gave him a keen sense of consumerism. He felt the computers should be developed and marketed as easy-to-use, consumer-oriented products in contrast to the overly technically inclined audience that home computer designers were then targeting. And although his suggestion during a meeting that the computers be marketed in different colours to attract housewives caused some Atari employees to quit on the spot, it turned out to foreshadow the way the market would go under Steve Jobs 20 years later with his coloured line of iMacs.

The problem was, with how right Kassar had been on everything, Bushnell was also right. By 1980 what would be the 2600's biggest competitor, Mattel's Intellivision, would be launched nationally, followed by a blitz of ads showing the Intellivision's more detailed sprites and the advantages of its 16-direction controllers, all summed up by a snooty and arrogant George Plimpton showing side-by-side comparisons. Combined with the rise of a third-party market of 2600 games thanks to the defection of some of Atari's game programmers to form Activision, Kassar knew that the company had to do something or lose its grip on the industry. And the rest of Atari knew that it now had no choice but to work on a direct answer to the Intellivision.

"THE ATARI 5200 WAS CREATED FOR THOSE PLAYERS WHO DEMAND VIDEO GAME TECHNOLOGY"

– MICHAEL MOONE, PRESIDENT OF ATARI CONSUMER ELECTRONICS DIVISION

Steve Bristow and a team of engineers began working on an update to the 2600, codenamed 'Super Stella', 'Sylvia', the '3200', and even 'System X' at different times. They decided to bring the 2600's design more towards the new computer line by reproducing the format of the custom graphics chip team of GTIA and ANTIC. Keeping it backwards compatible with the 2600 was imperative, and accomplished by substituting the GTIA with an advanced version of the 2600's TIA graphics and sound chip called Super TIA or STIA. Likewise, System X was to get its own version of the ANTIC called FRANTIC, and the addition of a Votrax voice synthesis chip. It would also get a memory upgrade from 128 bytes to a full 2K of memory, which was a big upgrade for 1980 and more in line with Intellivision's standards, if not more powerful when the ANTIC's display list technology was considered. The console and controllers would use a new advanced wedge shape design form by designer Roy Nishi, which he was also using for the in-development remote control version of the 2600 called the Atari 2700. The controllers themselves featured side-mounted buttons and an eight-direction digital joystick with the look of a primordial Atari 5200 controller. Unfortunately, System X only got as far as full schematics and a black box development unit, along with case and controller mockups, before notice came down the line that it was scrapped. Apparently the guys in the Home Computer Division (HCD) were raising a ruckus over their technology being marginalised if the Super TIA would have gone all the way through development. In a classic example of wasting time by running in circles, the push was made to use Atari's PCS technology after all.

Recycling the System X designation and some of the casing and controller work, in 1981 this new system's development started. This time, however, given the full support of Kassar and the Consumer Electronics Division (CED), all stops would be pulled to create a deluxe game system. In order to crush Intellivision, and in effect start the

ATARI 5200

» The System X never made it past the early prototype stages before its designation was borrowed for what would eventually become the 5200.

next generation of 8-bit game consoles, they wanted to try to bring a full arcade experience to the home.

First, the team started moving the entire multiboard PCS architecture to a single board system that would fit in the wedge-shape case form factor. This included keeping the unique four controller ports, but moving to a novel hookup scheme by combining the power and antenna cord into a single cable that attached to a combined antenna/power box. A setup not seen since the RCA Studio II in 1977, Atari upped the ante by making it auto-switching – the very first console to do so.

Secondly, work was done to try to bring in controller features to compete against Intellivision's 16-direction keypad-driven controller, while providing the functionality for paddle-driven games that a digital controller simply could not support. The answer came in the form of a full analogue controller driven by two potentiometers, which when combined together would give a full 360-degree range of motion as well as provide accuracy for paddle games. It had the added benefit of being able to support velocity-tracking to control a character's speed of motion. The side-mounted buttons of the original System X's controllers were split into two A and B buttons on each side. Finally, a full keypad was added to the controller's empty space to allow the extra input control expected in the more advanced games on Atari's computer systems. Besides the start and reset buttons, both also found on the PCSs, a feature that gamers had been clamouring for was added as well: a pause button. This new controller was referred to as the 'Universal Game Controller', meant to imply that this was a deluxe controller – a luxury experience. To go with that experience, the team leveraged the now-cancelled Atari 2700's console-based controller storage area, complete with flip-up smoked plastic lid to complement anyone's early Eighties entertainment centre.

"NO! WE ARE NOT HCD! WE DON'T WANT THE 5200 TO BE A COMPUTER!"

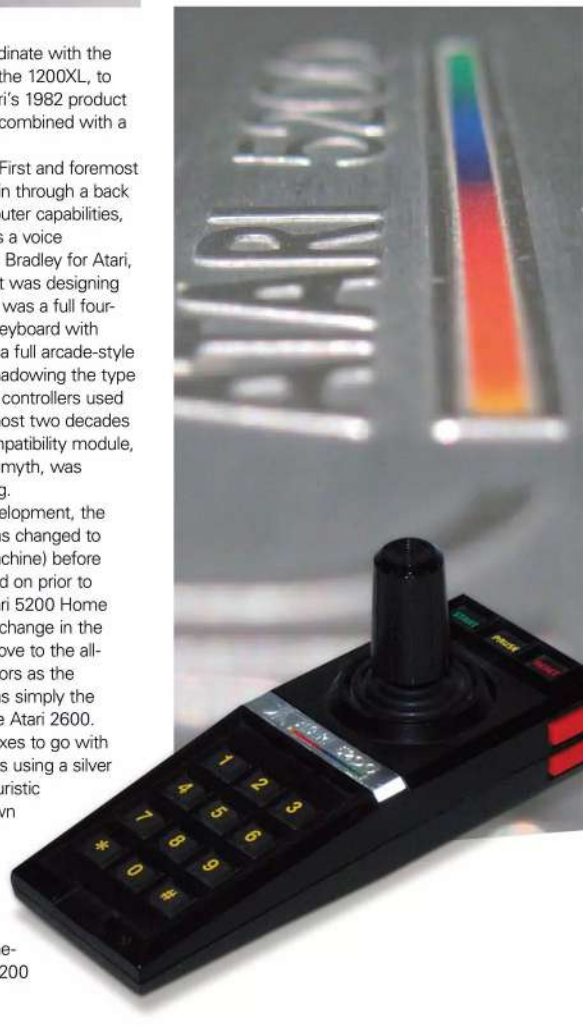
– GEORGE KISS, DIRECTOR OF SOFTWARE, CONSUMER ELECTRONICS DIVISION

The case itself also was updated to co-ordinate with the HCD's pending update to its computer line, the 1200XL, to give a unified look across the entirety of Atari's 1982 product line. In came glossy and matte black plastic combined with a futuristic brushed metal inlay.

A bevy of peripherals were also planned. First and foremost was a keyboard expansion that was to plug in through a back expansion port, giving the 5200 some computer capabilities, including peripheral expansions. Second was a voice expansion module being designed by Milton Bradley for Atari, which would coincide with the version that it was designing for the 2600 as well. Third was a full four-voice, 48-octave musical keyboard with stereo output. Fourth was a full arcade-style 'Trak-Ball' controller, foreshadowing the type of in-home full-size arcade controllers used by MAME enthusiasts almost two decades later. Last was a 2600 compatibility module, which, contrary to popular myth, was planned from the beginning.

During much of the development, the system's internal name was changed to PAM (Personal Arcade Machine) before the final name was decided on prior to its public unveiling: the Atari 5200 Home Entertainment System. The move caused a change in the 2600's naming as well, just in time for its move to the all-black version affectionately known to collectors as the 'Darth Vader' model. Previously referred to as simply the Video Computer System, it now became the Atari 2600. Atari also updated the console and game boxes to go with the new launch, with boxes for both systems using a silver motif. Additionally, game boxes received futuristic hologram stickers, remnants of the shut-down Atari Cosmos tabletop game project.

Atari was also very careful in its pending marketing strategy for the system to explain that the 5200 was not a replacement for the 2600. At $299.95, it was to be considered a high-end, state-of-the-art videogame system, with the 2600 and 5200



Community

1. Atari Museum
www.atarimuseum.com
■ The Atari Museum, home of the Atari Historical Society, is the premier Atari archive. Run by noted Atari historian Curt Vendel, the site houses information and exclusive material not found anywhere else, thanks to Vendel's close ties to former Atari employees.

2. AtariAge
www.atariage.com
■ If you want to find the current fan base of the 5200, you'll find it at AtariAge's bustling online community. The de facto community site for the Atari scene, you'll also find a store that supports current 5200 homebrew authors with full packaged releases of their games.

3. Cafeman's Atari 5200 Supersystem Page
cafeman.www9.50megs.com/atari/atari5200.html
■ Ron Lloyd's shrine to the 5200 hasn't been updated in a while, but still remains a great source of information and commentary from some of the original Atari 5200 game developers.

4. Best Electronics
www.best-electronics-ca.com/cx52_j.htm
■ We've all heard about the problems with 5200 controllers breaking down. With 26 years in the business supplying replacement parts from Atari's original warehoused service stock, this is the place to go for every single part needed to repair your controllers.

comprising "two home game systems in the same spirit in which an automobile manufacturer builds different models to suit different tastes".

With press first going out in May of 1982 and the big intro at the June CES with a view to an October launch, things were looking great for the console. Or so they thought.

In May, when Atari was announcing its next-generation system, another company thought to be long out of videogames surprised everyone. Coleco started announcing its own next-generation videogame system, the ColecoVision. Atari was caught completely off-guard and had to scramble to start a strategy against its new main competitor, once it was able to see the console at the June CES. Here it was, ready to kill Mattel and claim victory over the market by creating a new high-end niche while dominating the low end, and now the game had completely changed.

To make matters worse, during August and September focus groups were less than positive about the 5200's controllers. While many of the testers understood the possible advantages of learning to use the new controller format in the long run, most complained about the lack of resistance in the controllers, as well as the difficulty in playing four-direction precision games like *Pac-Man*. Also, in direct side-by-side focus tests with the ColecoVision, testers thought games on both systems looked equally great, with Atari's only advantage being that the system's case and controller styling were more appealing. Media reviews had a similar outlook, with the addition of complaints that the initial launch titles were the same old games already on the 2600, including the surprise inclusion of *Super Breakout* as the pack-in game instead of one of Atari's more high-profile licences like *Pac-Man*.

Likewise, many of the planned expansions and peripherals became like roadkill on the road to market survival. CED's pride and competition against HCD caused it to want to make sure the 5200 was nothing like the Atari 400, and that it would never be mistaken for a computer. Axed were the keyboard expansions by the October launch, which soon after also led to the cancellation of the voice expansion for both the 5200 and 2600, and an eventual lawsuit from Milton Bradley.

Atari worked to rectify many of these faults, however, and managed to release a good number of new titles for the system over the coming year. It also managed to delay some games for its other platforms to make sure that the 5200 had a certain degree of exclusivity. By 1983, a revised two-controller-port model was released with sturdier parts on the controllers and a new pack-in game: *Pac-Man*. It also dropped the odd single power/television cord in favour of a more traditional two-cable separate switchbox setup. However, by that time sales were already seen as lacklustre, and the console's future was being questioned, both inside the company and by industry commentators. To make matters worse, the 2600 module was absent almost the entire time, giving Coleco the advantage of backwards compatibility with the 2600 via its own module. By the time it appeared for the two-port model, owners of the older four-port version found that they couldn't use it, save for the few that were lucky to get the last revision before the move to the newer model.

A final cost-reduced version was being worked on, codenamed the 5100, which cut the physical size of the console in half and included new CX-52L controllers – especially designed self-centring joysticks with spring-loaded side buttons – but it never made it to market. By February of 1982, production of the 5200 was secretly ended. When Atari finally acknowledged it in May, it was ready to position the upcoming Atari 7800 as its replacement. As is well-known, however, Atari became a prominent victim of the North American videogame crash of 1982-1984, with the entire consumer division sold off to Jack Tramiel to form his Atari Corp. Unknown to many collectors, Tramiel actually re-released the four-port 5200 version in 1985 in an effort to sell off his sizeable inherited back stock of products. Featuring cost-reduced packaging and a return to the *Super Breakout* pack-in, he also re-released many of the previous games in similar packaging. Tramiel brought to market several previously finished but unreleased games that were thought victims of the crash: *Gremlins* and the groundbreaking Lucasfilm titles *Rescue On Fractalus!* and *Ballblazer*. Actually generating strong sales for several years during this era of the NES, Sega Master System and Atari 7800, support for the 5200 was finally dropped by 1991, closing the book on what was once to be Atari's flagship console.

The design of the original System X 'Sylvia' hardware, sometimes known as the 3200, still holds retro appeal today.

Special thanks to **Kris Kelley** and the Atari Historical Society **(atarimuseum.com)** for kindly supplying hardware images

ATARI 5200

PERFECT TEN GAMES

01

SINISTAR

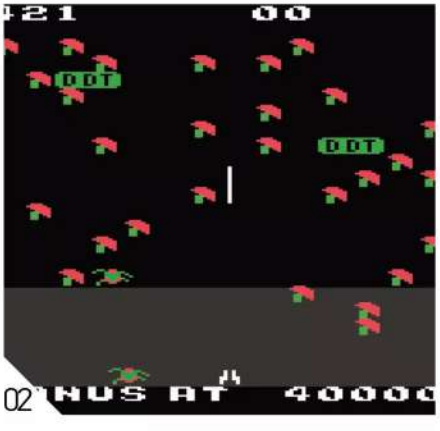
» **RELEASE:** 2010
» **PUBLISHER:** ATARIAGE
» **BY THE SAME PUBLISHER:** N/A

01 The first coin-op game to inspire fear in gamers with its boss's demonic-sounding digitized voice, Atari was working on a port for its 8-bit computers when the company cancelled it due to its severe financial problems. Almost completely finished save for some minor points, it remained a distant memory while passing through many hands over the years. That is until recently, when a 5200 homebrewer ported the game to the 5200 and AtariAge decided to make full productions complete with great label art. The game truly shows off the 5200's capabilities of reproducing early Eighties arcade titles, and the gameplay is great, successfully re-creating the franticness of the original.

MILLIPEDE

» **RELEASE:** 2002
» **PUBLISHER:** ATARIAGE
» **BY THE SAME PUBLISHER:** N/A

02 Yet another victim of Atari's implosion, Millipede is a port of Atari's seminal follow-up to its monster 1980 hit, *Centipede*. Ready to go and even listed in the 1984 catalogue back in the day, its axing meant that gamers wanting to play *Centipede* would have to either purchase the 8-bit computer version or wind up having to suffer through a pretty terrible 2600 port. That is until AtariAge once again came to the rescue with a full re-production. *Millipede* is truly a joy to play with the 5200's Trak-Ball (yes, Atari spelled it with a "k"!) controller. The graphics and gameplay are spot on when compared to the original, with even the animated title screen re-created perfectly.



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BALLBLAZER

» **RELEASE:** 1986
» **PUBLISHER:** ATARI
» **BY THE SAME PUBLISHER:** JOUST

03 *Ballblazer* was one of Lucasfilm Games' first titles. Taking full advantage of the 8-bit computer and 5200's scrolling capabilities, Lucasfilm managed to create a beautiful futuristic 3D 'soccer' match complete with continuous fractalised music. Because the partnership was such a big deal, Atari wanted to hold off the computer release to give the 5200 and then the 7800 some exclusivity. Unfortunately it wound up backfiring, and the company imploded during the interim, leaving 5200 owners having to wait until Jack Tramiel revived 5200 sales in 1986.

MS. PAC-MAN

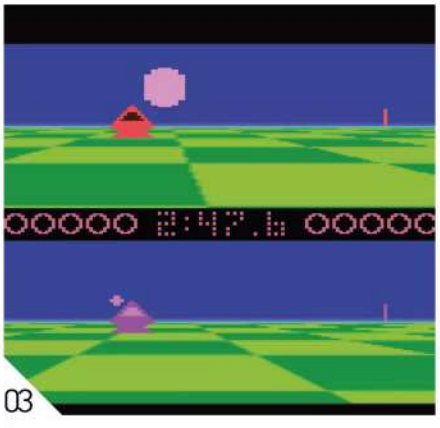
» **RELEASE:** 1983
» **PUBLISHER:** ATARI
» **BY THE SAME PUBLISHER:** MISSILE COMMAND

04 What can be said about this bow-wearing beauty that hasn't already been said? Well how about that the 5200 port is an extremely solid re-creation of her arcade appearance complete with all the fun intermission animations and different levels? This Atari conversion is a massive step up from the earlier-released *Pac-Man* for the 5200, as this time around the programmers concentrated more on re-creating the overall faithfulness of the arcade game rather than just the speed of the original. A very solid conversion that's definitely worth tracking down if you are a fan of the arcade version.

ROBOTRON: 2084

» **RELEASE:** 1983
» **PUBLISHER:** ATARI
» **BY THE SAME PUBLISHER:** SUPER BREAKOUT

05 What can get crazier than a session of Eugene Jarvis and Larry DeMar's classic in the arcade? How about a near-perfect port at home complete with dual joysticks? The 5200 version shipped with a special joystick coupler that enabled you to use both of the 5200's controllers to play the game as it was meant to be played. The looser feeling of the 5200's analogue sticks truly makes the fast multi-directional twitching a breeze to carry off. Some even like playing it on here better than the original. Another fantastic arcade conversion that 5200 collectors should immediately seek out.



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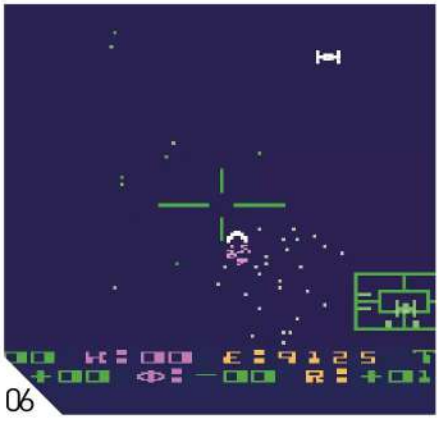
Due to unfortunate timing, the Atari 5200 didn't have the largest of catalogues. Fortunately both Atari (and later the homebrew community) released some truly fantastic games for it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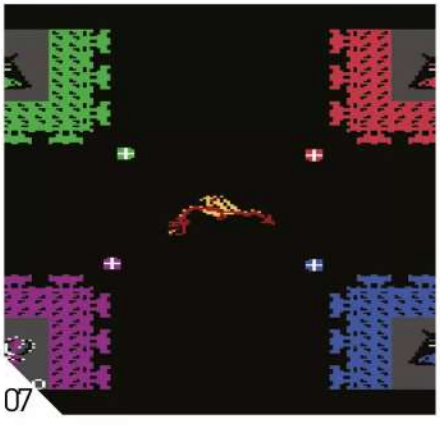
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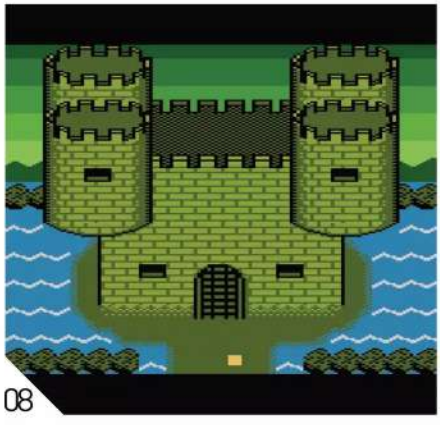
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STAR RAIDERS

» **RELEASE:** 1982
» **PUBLISHER:** ATARI
» **BY THE SAME PUBLISHER:** BATTLEZONE

06 You simply can't say you've experienced gaming on any Atari platform until you've spent time playing this classic. Designed for Atari's computer line in 1979 to show off their advanced capabilities, it was popular enough to later port to the Atari 2600, 5200, ST, and even inspire a graphic novel by DC comics. You're treated to a first-person view of a cockpit going through space, reminiscent of Exidy's Seventies classic *Star Fire*. With gameplay similar to the classic *Star Trek* text game, you go from sector to sector (via your trusty galactic chart) clearing each of those pesky Zylon ships.

CASTLE CRISIS

» **RELEASE:** 2004
» **PUBLISHER:** SELF-PUBLISHED
» **BY THE SAME PUBLISHER:** N/A

07 *Castle Crisis* is a homebrew game by veteran programmer Bryan Edewaard, and fans of the multiplayer coin-op favourite *Warlords* will be happy to learn this is a graphically arcade perfect port of that game, even though it doesn't share the same name. Which you would expect considering the arcade version ran on virtually identical hardware. The Atari 5200's analogue controllers are simply perfect for the precision needed to break out a pair of spinners, which is a problem that plagued many of the earlier ports of this game to other home consoles.

ADVENTURE II

» **RELEASE:** 2007
» **PUBLISHER:** SELF-PUBLISHED
» **BY THE SAME PUBLISHER:** KOFFI: YELLOW KOPTER

08 No, this isn't like Dana Marschz's *Hamlet 2*. Atari 5200 homebrewer extraordinaire Ron Lloyd managed to create a legitimate follow-up to the hit 2600 classic, to the point of Atari giving its blessing in exchange for using it to create a scaled-down 2600 version for their Flashback 2 console. Keeping the fun gameplay of the original but vastly updating the graphics, *Adventure II* also includes plenty of new locations and foes to test you. It's worth it to pick it up for the beautiful graphics alone, but the additional updates and expansions make this a fantastic game for the 5200.

09

KOFFI: YELLOW KOPTER

» **RELEASE:** 2002
» **PUBLISHER:** SELF-PUBLISHED
» **BY THE SAME PUBLISHER:** ADVENTURE II

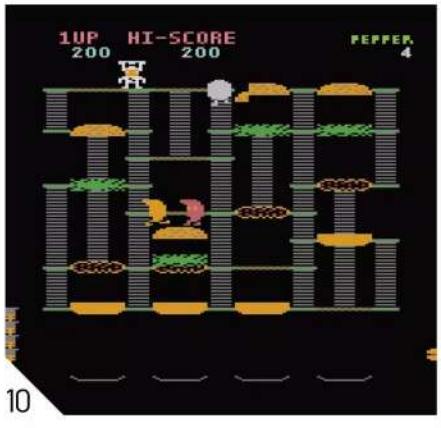
09 Another homebrew classic by Ron Lloyd, this is a completely original game featuring a cartoonish yellow helicopter. Like a chopper version of Rudolph the Red Nosed Reindeer, Koffi is not allowed to go with the bigger rescue 'kopters' on missions. But when he learns of an insidious plan by Pyro the Storm Cloud to burn down the forests, Koffi flies into action to protect the woodland and the animals that live there.

In a take on US Games' 'Name This Game' contest for its 2600 game release in 1982, AtariAge forum members were allowed to enter a contest to design one of the animals appearing in the game.

BEEF DROP

» **RELEASE:** 2004
» **PUBLISHER:** SELF-PUBLISHED
» **BY THE SAME PUBLISHER:** N/A

10 Mattel was responsible for porting Data East's coin-op classic *Burger Time* to the Intellivision (which is considered an excellent port), and its M-Network Publishing ported it to the Atari 2600, Apple II, and IBM PC. Unfortunately, the 5200 had zero chef love, which was a real shame. Thanks to Ken Siders, however, burger-loving 5200 owners can now build them all day long. Initially unveiled under the guise of an April Fool's joke surrounding a "found" prototype, Ken thankfully soon revealed that he had coded it up and was soon looking to publish it as the complete game. *Beef Drop* is the excellent end result.



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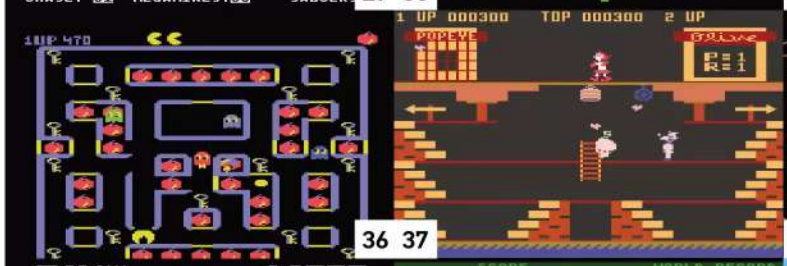
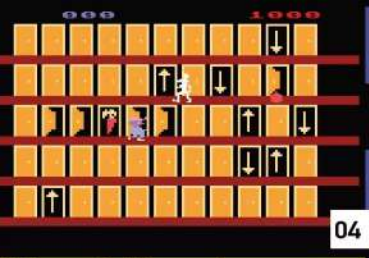
ATARI 5200

ATARI® 5200 and the rest...

The Atari 5200's library of games may be small, but there are still plenty of great arcade conversions and original games to discover on it

01 CONGO BONGO
02 ROBOTRON: 2084
03 FROGGER II: THREEEDEEP!
04 LOONEY TUNES HOTEL
05 BERZERK
06 REALSPORTS BASKETBALL
07 ZAXXON
08 BALLBLAZER
09 CHOPLIFTER
10 JAMES BOND 007
11 MARIO BROS
12 DIG DUG
13 PENGO
14 TEMPEST
15 Q*BERT
16 ASTEROIDS
17 DECATHLON
18 KEYSTONE KAPERS
19 MONTEZUMA'S REVENGE
20 GORF
21 STARGATE
22 PITFALL II: THE LOST CAVERNS
23 COUNTERMEASURE
24 KABOOM!
25 RIVER RAID
26 SUPER BREAKOUT
27 VANGUARD
28 MEGAMANIA
29 ASTROCHASE
30 CENTIPEDE
31 H.E.R.O.
32 MISSILE COMMAND
33 FRISKY TOM
34 REALSPORTS BASEBALL
35 KANGAROO
36 SUPER PAC-MAN
37 POPEYE
38 DEFENDER
39 WIZARD OF WOR
40 MINIATURE GOLF
41 RESCUE ON FRACTALUS!
42 JOUST
43 QIX
44 TRACK & FIELD
45 FINAL LEGACY
46 PAC-MAN
47 BLACK BELT
48 STAR WARS: THE ARCADE GAME
49 GALAXIAN
50 BATTLEZONE
51 SPACE INVADERS
52 MINER 2049ER
53 POLE POSITION
54 ZONE RANGER
55 BEAMRIDER
56 MR DO'S CASTLE





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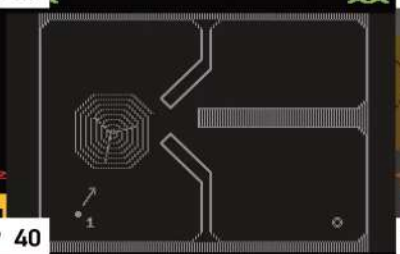

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BARBARIAN
00600 04 00550
DEMO
GT 65 Monitor
AMSTRAD
brightness
contrast
v-hold
power
on
off
MASTER COLOUR
0 BLACK
1 BLUE
2 BRIGHT BLUE
3 RED
4 MAGENTA
5 MAUVE
6 BRIGHT RED
7 PURPLE
8 BRIGHT MAGENTA
9 GREEN
10 CYAN
11 SKY BLUE
12 YELLOW
13 WHITE
14 PASTEL BLUE
15 ORANGE
16 PINK
17 PASTEL MAGENTA

AMSTRAD CPC 6128

WHEN THE AMSTRAD CPC 6128 WAS INTRODUCED IN 1985, SOME GAMERS DISMISSED IT AS A SERIOUS COMPUTER. BUT WHILE IT CERTAINLY LOOKED THE BUSINESS, BEHIND THE STRAIGHT-LACED EXTERIOR WAS A MACHINE WITH LOTS OF ADDED FUN

Year released: 1985

Original price: £299 (with green-screen monitor), £399 (with colour-screen monitor)

Buy it now for: £25+

Associated magazines: Amtix, Computing With The Amstrad (later known as CPC Computing), Amstrad Computer User (official publication), Amstrad Action, CPC Attack, fanzine WACCI

Why the CPC 6128 was great... It may not have been as cool as the Spectrum or as desirable as a Commodore 64, but the CPC 6128 was arguably the greatest 8-bit machine ever made. Adaptable (plug in a tape drive, fiddle endlessly with the volume control and you had a 464 with knobs on) and dependable, there was a mountain of games, a thriving community, and a real spirit of the underdog.

» *Amstrad CPC 464 User* magazine unveils the brand new – short-lived – 664.

Sitting atop a chunky slab of plastic, the CPC 664's white and blue keys and the clumsy-looking addition of a disk drive exuded such ugliness that you couldn't help but feel sorry for the poor sods who bought it. It was a step up from Amstrad's iconic cassette-based 464 in the sense that it added a three-inch disk drive of the like seen in the Oric Atmos, some extra BASIC commands and both the AMSDOS and CP/M 2.2 operating systems. But while it sold around 10,000 units, within five months it was replaced by the 6128 – a machine which not only doubled the memory of its predecessor but looked far sleeker, too.

And so it was that the CPC 6128 came into being. It was launched in America in 1985 and it came to Europe shortly afterwards, making its UK debut at a glitzy press conference in London with BBC newsreader Richard Whitmore overseeing proceedings. Boasting the same three-inch drive, the only real features to distinguish the 6128 from the 664 were the 128K of RAM and a better, plain white, springier keyboard. The extra memory was an important addition, however, as it was used as a RAM disk or to store data such as gaming levels. In some cases, the 128K versions of CPC games would carry sound not heard in their 64K counterparts and all of this allowed developers to give their titles a little boost from time to time.

Before its unveiling, Mr Whitmore led the assembled journalists and dealers through a potted history of Amstrad. But it was Sir Alan Sugar himself who whipped the covers off the 6128 to show his new machine in all its glory. In doing so, he declared the 664 "well and truly dead" and he said the new arrival was due to "a leap in technology". He later stated that the 6128 was aimed at a more serious buyer, although the decision to make the machine compatible with 464 and 664 software created an instant back catalogue of games for the new machine.

"There was a simple reason for launching the CPC 6128," says Cliff Lawson, who worked on the product launch of both the 6128 and 664. "It could be produced for the same money as the 664 so Amstrad decided it would be wise to go for the better product. It offered the punter more and it was, dare I say, much prettier, too."

The 6128 was one of two computers to be unveiled by Amstrad at the same time. The other was the PCW8256, pitched mainly at businesses. That machine came with a monochrome monitor, 256K of memory, a built-in disk drive, a printer and word-processing software, but it wasn't compatible with the CPC and there was no intention of opening its appeal to gamers. The PCW retailed at £460 and, as the trumpets blared for the 6128, the 464 was cut in price, bringing its cost down to £199 for the green-screen version and £299 for colour. In some sense, it meant that the 6128 was a halfway house – part business, part pleasure – bridging the gap between the PCW and the 464.

One of the first games to take advantage of the added capacity that the extra 64K of the 6128 offered was *Sorcery+*. Released in 1985, players of this disk-based joystick-only game saw many enhancements over the original *Sorcery*, including an extra 35 screens. Amstrad loved the lush look so much that it used screens of the game in its promotional literature and yet such enhancements didn't become the norm.

Although it was possible for both 464 and 664 owners to buy a 64K memory pack, which could be inserted into an expansion slot at the back of both computers (Datel Electronics would advertise Dk'tronics' 64K memory on a monthly basis), sales were not sufficiently high enough for all developers to put in the extra effort of creating additional enhancements. The gaming benefits of purchasing extra memory were not heavily pushed either, so whether or not a game carried the extra power depended on the whim of the developer or, in some cases, the near impossibility of making a game as impressive in 64K as it would be using double that memory.

INSTANT EXPERT

The Amstrad CPC 6128 was launched in 1985 as a successor to the short-lived CPC 664, adding 128K.

It cost £399 which made it more expensive than its monitor-less rivals, the Spectum and C64. Amstrad wanted its machine to be an all-in-one solution powered with just one plug.

Although the internal drive accepted three-inch disks, it was possible to connect a second drive – either Amstrad's own three-incher, or one which accepted 3.5 or 5.25-inch disks.

The 6128 had 32K of ROM – and this contained the AMSDOS operating system and the Locomotive BASIC interpreter.

Amstrad marketed the 6128 as an all-rounder – good for programming and word processing, but equally at home with games. It was a perfect hook for kids to pester their parents.

Many 6128s therefore found themselves employed in businesses – and there was one sighting of it being used to operate a ride at Blackpool Pleasure Beach.

Educational software existed for the CPC 6128 but BBC computers dominated schools so it failed to make major inroads.

Many people hooked the 6128 to a tape deck and used the Multiface 2 to copy cassette games to disk.

As time went on, more games took advantage of the extra 64K and it came in handy for reducing loading times, too.

In 1990, the CPC 6128 was replaced by the 6128 Plus. It retained the three-inch drive but added a cartridge slot as part of a major redesign.

COMMUNITY CPC 6128 SITES TO WATCH

CPC Fanzine

www.cpcfanzine.com

Getting its start as a Kickstarter project, this fanzine covers all Amstrad CPCs with news and reviews on the latest software. The first issue was in black and white in A5-size so it had the look and feel of a fanzine from the 80s but future issues will include colour.

WinApe

www.winape.net

If you want to get back into CPC gaming or see what all the fuss is about, then you'll need to find a good emulator and there are few better than WinApe. Constantly updated, you can emulate all of the CPC models, including the 6128 and 6128 Plus.

SymbOS

www.symbos.de

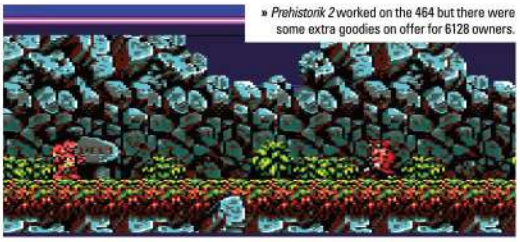
For people more used to GUIs, the blue screen with yellow text that greets CPCers can be a little alien. SymbOS is a project that adds a Windows-style environment to the Amstrad and it even supports hard drives with capacity up to 128MB. Check it out.

The Amstrad CPC Games Resource

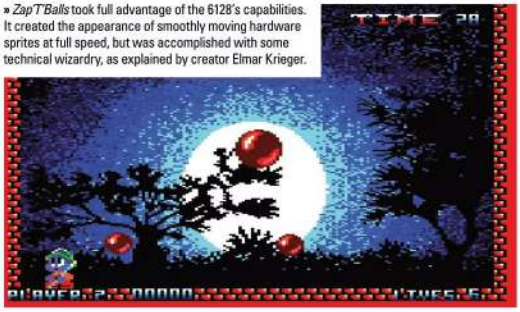
http://tacgr.emuunlim.com

Once you've got your emulator going, you'll need some games. This website is full of retro delights and, as long as you already own copies of the games you download, you'll be on safe ground. It's a popular, well-run and resourced website.

» *Prehistorik 2* worked on the 464 but there were some extra goodies on offer for 6128 owners.



» *Zap'T'Balls* took full advantage of the 6128's capabilities. It created the appearance of smoothly moving hardware sprites at full speed, but was accomplished with some technical wizardry, as explained by creator Elmar Krieger.



» The game box of *Computer Scrabble De Luxe* tells buyers the title is intended for the 6128.

TAPE AND DISK-BASED PLUS GAMES

The introduction of the three-inch disk drive with the 664 and 6128 proved to be a controversial decision at the time of its release. Amstrad seemed to adore the format, using it with its PCW range and with the Spectrum +3, despite the existence of the 5.25-inch and 3.5-inch disk formats. What annoyed people the most though was that 3.5-inch disks

held far more and became rapidly cheaper, so it was all the more surprising that Amstrad didn't scrap three-inch disks when making the move to the 6128 Plus in 1990.

"We looked at a number of storage systems including classic 5.25-inch floppy disks, three-inch floppy disks (like the 5.25-inch ones but smaller),

3.5-inch hard-case floppy disks and the three-inch hard-case disk," says Roland Perry. "At the time, the 3.5-inch disk wasn't 'IBM compatible' and it was a long time before the firm chose the format for the PS/2. So we decided to go for the three-inch disk as it was 'IBM compatible'. The three-inch disk also had the best price and performance, including our ability to commission custom-built units from an existing supplier."

Indeed, as the 6128 launched, some developers decided they wouldn't be sticking their neck out in support of the added extras of the new machine. Paula Byrne, of Melbourne House, said she would see how well the machine sold and Taskset's Paul Hodgson felt Amstrad missed an opportunity to enhance the graphics and sound chips and said he had no immediate plans to make games for it. But it wasn't all doom and gloom. Gremlin's Ian Stewart said it paved the way for better games and his company certainly made use of the new facilities on offer as the years went on.

"Amstrad didn't encourage 128K disk-based games to be produced," admits Cliff. "It wasn't particularly important since the extra memory was seen to have greater use with serious applications. The 64K games at the time worked well on the full range of Amstrad's CPC machines and it was in everyone's interest to ensure titles operated across the entire range and that the market wouldn't be split."

Around six months after launch, both the 6128 and the PCW were doing well. Amstrad announced £27.5 million half-yearly profits in April 2006 with sales in the six months to December 1985 increasing from £69 million to £128 million. The PCW8256 accounted for 20 per cent of the company's turnover, but the 6128 was becoming a market leader in France, as well as making major inroads into Germany and Spain.

Yet, for the average gamer, such corporate guff mattered little. They were more interested in enjoying some of the gems which were launched over the course of the 6128's life span. As time went on, more games arrived that could only be played with 128K of memory. They included Gremlin's *Nigel Mansell's World Championship*, one of the best Formula 1 games ever launched on the Amstrad and a title which deservedly won it much praise in the CPC gaming press.

Indeed, Gremlin, as we have discussed, liked to use the extra RAM to get the best out of its games. It produced 128K versions of *Space Crusade* and *Super Cars*. And titles such as *HeroQuest* and *Switchblade* contained music on the 6128, whereas, on an unexpanded 464, there were no tunes at all. Some differences were more subtle, however. "In *Lotus Esprit Turbo Challenge*," explains Nicholas Campbell, the CPC Games Review webmaster, "the only difference, as far as I am aware, is that the 'handbook' (the screens displaying the car's specifications) is loaded separately on the 64K version, whereas it is included with the main game in the 128K version."

There was more… Level 9's games, including *Gnome Ranger, Ingrid's Back, Knight Orc, Lancelot* and *Scapeghost*, did not contain graphics on a non-enhanced 464, but the 6128 proudly showed off a host of pictures. This was also the case with *The Famous Five* as well as all four of *Magnetic Scrolls*' adventures for the CPC (*The Pawn, The Guild Of Thieves, Jinxter* and *Corruption*), which were only playable if 128K was available.

Add to that little list less prestigious titles such as *European Superleague* and *Computer Scrabble De Luxe*, throw in the likes of *Final Fight* (this game came on a dual-format disk with the Spectrum version on the other side), tag on *Gauntlet III, G-LOC, Gunboat*, and most of Microids' later releases – *Killerball, Sliders* and *Swap – No Exit, Pirates!*, then make space for all four of Silmarils' releases (*Windsurf Willy, Targhan, Xyphoes Fantasy* and *Bunny Bricks*), *SWIV* and *Times Of Lore* and you had a pretty good reason to go for Amstrad's best machine at the time. If nothing else, the extra vocal samples on *Chase H.Q.* were probably worth the price of an upgrade alone. Well, probably anyway.

And it wasn't just disk-based games that took advantage of the extra memory. It was possible to attach a cassette deck to the 6128 and most people did, enabling a huge library of cassette games to be played. Tape titles such as *Spellbound Dizzy* provided extra graphical effects on a 6128, such as animated Yolkfolk. It was possible to see changes to the main character when he wore a snorkel and scrolls would appear in the 128K version. With some other games, including *Gryzor, Renegade, Operation Thunderbolt* and *Bad Dudes Vs Dragon Ninja*, the levels could be loaded in one go. They were stored in the additional bank of 64K.

What's more, using Romantic Robot's Multiface 2, tape-based games could be backed up to disk for easier loading and it became one of the most vital pieces of kit for the 6128, despite accusations of piracy. The device was also brilliant for those who liked to cheat. *Amstrad Action* was among the magazines to print Multiface 2 cheats that could help frustrated gamers through pretty much every title ever made.

Where the 6128 really came into its own, though, was in the final throes of its life. During the early-Nineties, programmers had truly got to grips with the CPC and there was a thriving homebrew and semi-commercial scene. Since cassettes took an age to duplicate and were more prone to error, most smaller devs released their games on disk and they also decided to make full use of the 128K available to the vast majority of CPC disk-based machines.

Games such as *Zap'T'Balls* would only work with 128K present – and those who didn't play this *Pang*-inspired jaunt were missing out on a belter. Creator Elmar Krieger explains: "In *Zap'T'Balls* the focus was on 100 per cent smooth 50fps software sprites, and this required page flipping, so two lots of 16K were needed as video memory," he says. "While the software sprites moved, the part of the background that became visible again had to be restored. Doing this fast enough required a complete third backup copy of the screen. So with 48K of 'video' memory, the remaining 16K was just not enough for music, games and so on. That's why *Zap'T'Balls* was 128K only."

Elmar also created *Prehistorik 2* and this also made extra use of the 6128's capacity, not least the addition of in-game music. "With *Prehistorik*, I was able to produce a 64K tape version for the 464 because it only used 16K of video memory, without page flipping, and the background was composed of tiles which ultimately meant there was no need for a backup of the entire screen," he says. "But I used the extra memory on the 6128 for extra effects. I went even further with the CPC+ version, creating additional parallax scrolling foreground and background graphics."

Although actual figures are not available, the 6128 was a solid seller. It fared particularly well in France, where *Iron Lord* and *B.A.T.* were produced to great fanfare. "The 6128 was a natural progression for the CPC range, especially for CP/M applications," says Roland Perry, who was Amstrad's group technical manager in 1985. "Customers demanded more RAM, even if they were not sure what it might enable them to do better."

The 6128 was only discontinued in 1990 because of the introduction of the superior 6128 Plus and yet the CPC 6128 story doesn't end at the turn of the decade. Many programmers cut their teeth on the machine, helped along, no doubt, by the brilliant 6128 manual, which didn't just show you how to turn the computer on and operate it, but also included a comprehensive guide to programming in BASIC with some handy gaming-related type-ins at the back. It's fair to say the legacy of the 6128 has continued to this very day.

"The instruction book for the 6128 was my favourite and that's not just because I wrote most of it," laughs Roland. "I had time to mature the book so that it became a 'learn how to programme' manual. The 6128 was a very stable platform for programmers and I bet we helped nurture many a games programming career. For me, that's a great legacy. I really do think that's something to be proud of."

SPECIFICATIONS

Processor: Z80A 8-bit processor (4MHz)

Memory: 128K RAM

Drive: Three-inch disk drive. Tape deck could be attached

Monitor: Green screen or colour monitor

Typical resolution: 160 x 200 pixels in 16 colour Mode 0 (out of a palette of 27)

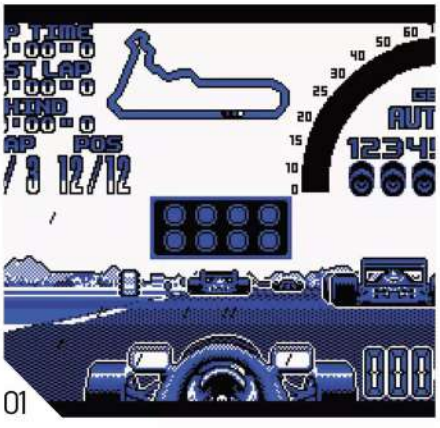
Sound: General Instrument AY-3-8912 sound chip, providing three channels

» Roland Perry oversaw the introduction of the 464, 664 and 6128 range of CPCs.

Credits: Very special thanks to reader Chris John for supplying us with his very own CPC 6128.

PERFECT TEN GAMES

Some games are poor. Some are great. And there are some which are wonderful and then made even better. Although the real joy came with a CPC 6128 exclusive, many games received a few tweaks here and there, improving them over their CPC 464 cousins. Here are our favourite ten CPC 6128 games…



01

NIGEL MANSELL'S WORLD CHAMPIONSHIP

- **RELEASED:** 1992
- **PUBLISHER:** GREMLIN
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SWITCHBLADE

01 Owners of the 464 may have disagreed, but if there was ever a game that made perfect sense on disk, then Nigel Mansell's *World Championship* was it. It was a racing game Gremlin had clearly spent time on, packing it with as many features as it could possibly fit into 128K of memory. Much of that attention was lavished on the revved-up graphics – the spinning globe, the delicious icons, Nigel's turning hands on the steering wheel – and yet it still left time to spare to ensure this was a blisteringly fast game. It filled not one but both sides of a disk and that led to lots of – seemingly random – side swapping. But it was the best example of a racing game to have ever graced the Amstrad.

CHASE H.Q.

- **RELEASED:** 1990
- **PUBLISHER:** OCEAN
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** TOTAL RECALL

02 If you ever heard the words 'Let's go, Mr Driver' coming out of the tinny speaker of your CPC, then chances are you were the proud owner of a 6128. The added 64K of memory was used to deliver some cool snippets of digitised speech – with another notable inclusion being the dreaded 'Your time's up' – and such utterances will surely continue to conjure up some truly magical memories to this day. But that's not the only reason that *Chase H.Q.* on the CPC 6128 rammed the CPC 464 version off the road. The tape version of the game was a multiload and while the loading time wasn't criminal, having the disk drive in the 6128 inevitably meant that the action came considerably faster.

02

SPELLBOUND DIZZY

- **RELEASED:** 1991
- **PUBLISHER:** CODEMASTERS
- **CREATED BY:** BIG RED SOFTWARE
- **BY THE SAME DEVELOPER:** PRINCE OF THE YOLKFOLK

03 *Spellbound Dizzy* was the largest *Dizzy* game ever, with its 105 rooms making it bigger than *Magicland* and *Fantasy World* put together. Critics said it was too big, and, given the *Dizzy* premise of finding objects to solve puzzles, having so many in one game did prove tiresome. However, for a *Dizzy* game not created by the Oliver Twins, it was full of interesting, fresh ideas. And although it came on cassette, the game made use of the 6128's extra 64K. So anyone with a 6128 and a tape drive could enjoy animated Yolkfolk, a sprite change for Dizzy when he donned a snorkel and the appearance of the scrolls.

B.A.T.

- **RELEASED:** 1991
- **PUBLISHER:** UBISOFT
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** ZOMBI

04 Costing a whopping £24.99 when it first arrived exclusively on disk, *B.A.T.* was a French, Orwellian-inspired, icon-driven adventure masterpiece. A game of enormous scope and size and boasting some of the best visuals of any CPC game ever made, what it lacked in sound – there was not a peep – it more than made up for with its challenge. Little surprise then that the manual was so incredibly detailed. It was akin to a small novel and it lent the title great depth. To do this game justice meant Ubisoft simply had to utilise 128K and it had to go for a disk. Fortunately, disks were more popular in France, where this game really excelled.

ZAP'T'BALLS

- **RELEASED:** 1992
- **PUBLISHER:** CPC AMSTRAD INTERNATIONAL
- **CREATED BY:** ELMSOFT
- **BY THE SAME DEVELOPER:** PREHISTORIK 2

05 The main article has already discussed why *Zap'T'Balls* wasn't released as a 64K, tape version. But even though it was made for the machine, not every 6128 owner could play it. Much of it depended on the type of CRTC chip in the computer. Elmar Krieger, who made the game exclusively for the CPC, said some disk drives had problems loading it too and he found the 6128 Plus appeared to run in to the most trouble. For those who got it to work, it was sparkling from the very moment the demo-inspired loading sequence sprung into action to the last pop of a balloon.

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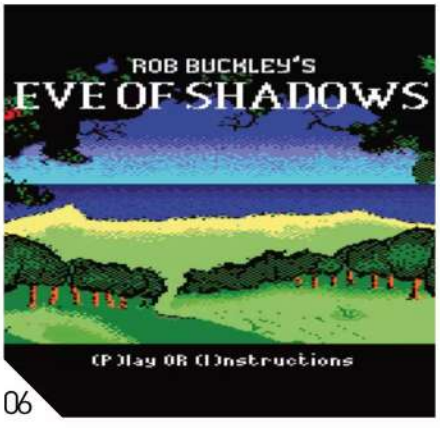

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EVE OF SHADOWS

- **RELEASED:** 1991
- **PUBLISHER:** ADVENTURE PD
- **CREATED BY:** ROB BUCKLEY
- **BY THE SAME DEVELOPER:** FLUFF

06 **Three things could put you off this game: it was written in BASIC, it only cost a quid or so to buy and it was never playtested.** But the odd spelling mistake here and there and the preconception that cheap must equal bad, especially when combined with a rather primitive program language didn't hamper *Eve Of Shadows* one bit. It made full use of the 128K and drive of the 6128, loading the text and graphics straight from the disk, to free up the memory for the actual code. That made *Eve* a sizeable text adventure, but it was also one that oozed professionalism. Sending a quid, disk and SAE for this back in 1991 was a wise move.

SORCERY+

- **RELEASED:** 1985
- **PUBLISHER:** VIRGIN
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** DAN DARE

07 ***Sorcery* was originally released on tape, but, to take advantage of the 6128, Virgin launched *Sorcery+*, adding an extra 35 screens to the 40 that were already on the cassette version.** This was made possible via the fast loading of the screens from disk. It let the developer pack in lots of other extras, too – including scrolling messages and demo modes – and such was its success (*Amstrad Action* awarded it 91 per cent, handing the original 90 per cent), that it was seen as the start of a bright disk-based 128K future. It didn't quite work out like that since not all games made use of the extra 64K, but it was a noble effort, that's for sure.

IRON LORD

- **RELEASED:** 1990
- **PUBLISHER:** UBISOFT
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** EXIT

08 **Ubisoft was a master of CPC design in the early-Nineties and, along with *B.A.T.*, *Iron Lord* was one of the undoubted classics from its French stable.** Artistic in looks, *Iron Lord* became a firm and unique favourite of the swords-and-sorcery genre. It employed a multiple-choice interface and was joystick operated and that worked wonderfully in sucking players in. It was also chock-full with sub-plots. Like *B.A.T.*, *Iron Lord* was disk-only and expensive (£19.99), but for that price you could spend hours submerged in the game's involving quests and feasting your eyes on illustrations that could have come straight out of a children's storybook.

09

PIRATES!

- **RELEASED:** 1987
- **PUBLISHER:** MICROPROSE
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** GUNSHIP

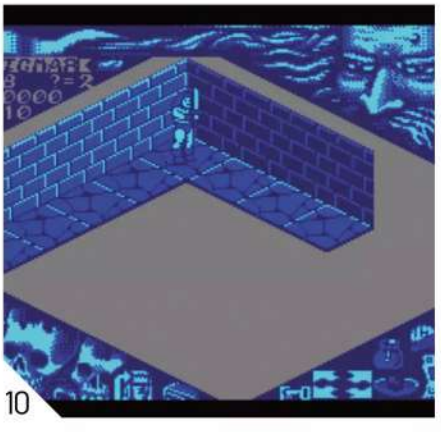
09 **Although a lot of 128K-only games would run on a 464 or 664 with a disk drive and 64K added, Sid Meier's *Pirates!* was a little bit different.** It only worked with a straightforward 6128 and no amount of jiggery pokery would alter that. It was a shame for other CPC owners because it was such a brilliant game, but then it did come on both sides of the disk and with a lengthy manual inside the box packed full of information. While the graphics were chunky and the sound effects were poor, there was a quality to this MicroProse game that was rarely seen. Sure, at £19.95, it was rather expensive, especially when you think that it was released in 1987, but it was definitely one not to have been missed.

HEROQUEST

- **RELEASED:** 1991
- **PUBLISHER:** GREMLIN
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** LOTUS ESPRIT TURBO CHALLENGE

10 **Sometimes it's the small things which make a difference.** That was certainly the case with *HeroQuest*, a game that thrilled fans of role-playing games and which came in two distinct flavours: 64K and 128K. What marked the latter was its wonderful sound or music, to be exact.

tThe medieval soundtrack was a joy to hear on the CPC 6128 and it brilliantly complemented the detailed, smooth visuals. It turned out to be one of the best games on the Amstrad in 1991, which is a massive compliment since it was something of a golden year for the machine. That it went down so well with critics and fans alike must have been music to Gremlin's ears.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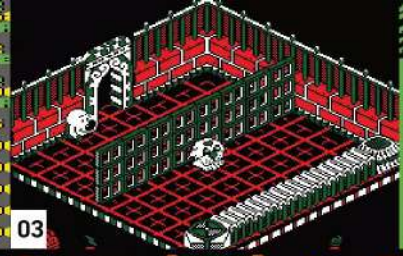
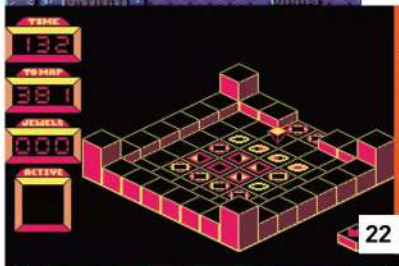
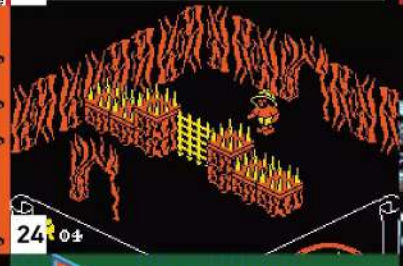
AMSTRAD CPC 6128

AMSTRAD CPC 6128 and the rest...

Sadly, the CPC 6128 didn't feature many games that took advantage of its more powerful technology. Good job it was backwards compatible with the CPC 464 back catalogue then. Here are a few of the highlights...







01 PRINCE OF PERSIA
01 1942
03 HEAD OVER HEELS
04 RAMBO: FIRST BLOOD PART II
05 BARBARIAN
06 POWER DRIFT
07 FEUD
08 TARGET: RENEGADE
09 IKARI WARRIORS
10 TOTAL ECLIPSE
11 ALIEN 8
12 GAME OVER
13 JET SET WILLY
14 SPACE HARRIER
15 BACTRON
16 DEATH WISH 3
17 KUNG-FU MASTER
18 SHOCKWAY RIDER
19 RICK DANGEROUS
20 KANE
21 WAY OF THE EXPLODING FIST
22 SPINDIZZY
23 GHOSTBUSTERS
24 KNIGHT LORE
25 STORMLORD
26 THUNDERCATS
27 THE SACRED ARMOUR OF ANTIRIAD
28 CHASE H.Q.
29 DRILLER
30 FORGOTTEN WORLDS
31 INSIDE OUTING
32 NEBULUS
33 RAINBOW ISLANDS
34 CYBERNOID
35 GRYZOR
36 TEENAGE MUTANT HERO TURTLES
37 FREDDY HARVEST
38 RAMPAGE
39 WARLOCK
40 SORCERY+
41 GUNFRIGHT
42 PLATOON
43 STAR WARS
44 JACK THE NIPPER
45 ROBOCOP
46 IK+
47 SOLOMON'S KEY
48 BATMAN
49 OPERATION WOLF
50 CASTLE MASTER
51 KARNOV
52 VINDICATORS
53 PIPE MANIA
54 CAULDRON II
55 SAVAGE
56 GAUNTLET II

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ATARI 800XL

BROADLY CONSIDERED THE FINEST ALL-ROUNDER IN ATARI'S 8-BIT HOME COMPUTER RANGE, THE XL WAS ALSO THE BIGGEST SELLER IN GLOBAL TERMS. BUT DESPITE TOP-CALIBRE SOFTWARE SUPPORT FROM THE LIKES OF LUCASFILM, EA AND EPYX, IT NEVER PENETRATED THE COMPUTING MARKET TO THE EXTENT OF ITS NEAREST RIVAL, THE C64. WE TAKE A WELL-EARNED LOOK AT THE HISTORY OF ATARI'S UNDERACHIEVING 8-BIT WONDER

In the fifth issue of fondly remembered C64 magazine *Zzap!64*, which hit newsstands in September 1985, Archer Maclean penned a tips guide for his classic shoot-'em-up *Dropzone*, which contained the oft-quoted (and misquoted) following comment. "The Atari, being the Porsche of home computers is capable of running *Dropzone* 2.5 times faster than the 64 and can handle any amount of blobs on screen. However, the 64 is still a respectable BMW 316 (S reg)." It was an unusual statement to find in a Commodore-oriented publication, and while Retro Gamer prefers to remain neutral in any debate regarding the technical superiority of either of the two competing machines, Archer may well have had a point.

Compared to the more popular home computers of the day, such as the ZX Spectrum and C64, Atari's computers were often regarded as high-end, and came equipped with an equally high-end price tag. In 1984, the newly released Atari 800XL, the computer designed to compete with the C64, was priced at around £250, considerably cheaper than its older sibling, the Atari 800, had been on launch in the US, but far more expensive than the Spectrum (£130) or C64 (£199). A higher price point than the more popular machines, and an over-reliance on the expensive cartridge format plagued Atari computer software. However, many classic games that originated on the Atari 8-bit computers, were faster and more refined than the now often better-known conversions on other contemporary platforms. But by the mid-Eighties, Atari had found to its cost that high-quality software, flashy technical specifications and above average build-quality simply wasn't enough to win in the fight for the hearts and minds of hobbyists and computer dealers whose main concern was competitive pricing.

In hindsight, Atari's relative failure with its 8-bit home computer range, at least in terms of longevity compared to its rivals, seems harsh when you consider that they were very much ahead of their time in conception. Work began on the company's first two home computer systems, the Atari 400 and 800, after the release of the 2600 console in 1977. "We knew we needed to leapfrog the 2600 before somebody else did," says Atari designer Joe Decuir. "We saw the Apple II, Commodore and Radio Shack machines coming, and we wanted to design a machine that would support home computer characters and bitmap graphics." Another member of the 400/800 dev team was Jay Miner, future 'Father of the Amiga', who headed design of the graphics display/output chips known as ANTIC and CTIA. A third custom chip (POKEY) handled peripheral input/output and sound, and these separate co-processors freed up the main CPU, improving performance. An industry first, the concept of separate dedicated chips to drive graphics and sound would be taken to its logical extreme when ex-Atari employees, including Jay, were hired by Commodore to produce its first 16-bit home computer.

Debuting in the US in autumn 1979, the Atari 400 and 800 computers sold for $549 and $999 respectively. The 400, with its membrane keyboard was geared towards the home hobbyist and games market and was intended to ship with 4K of RAM. The 800 was designed as a higher-end or business machine, and came equipped with 8K of memory. Both computers were capable pieces of hardware

INSTANT EXPERT

The Atari 800XL was one of the third generation of Atari 8-bit home computers, and was preceded by the Atari 400, 800 and 1200XL. It is backwardly compatible with most software. It was Atari's bestselling 8-bit computer system worldwide.

Atari's home computers were the first to use special custom processors for graphics and device input/output, which freed up the main CPU for other tasks, a concept used by developers Jay Miner and Joe Decuir, on leaving Atari, for the design of the Amiga.

The Atari 8-bit computers were based on a 1.79MHz 6502 CPU, a considerably faster clock speed than its competitor, the C64, which had a 1MHz 6502 processor. As a result many maths-intensive titles, such as *Rescue On Fractalus!*, were faster on Atari machines than on the C64.

The 800XL had a little brother, the Atari 600XL, which was effectively the same machine but came equipped with 16K RAM, as opposed to the 800XL's 64K, and lacked the 800XL's composite video output.

The custom graphics chips in the 600XL/800XL computers were called ANTIC and GTIA, and offered sprite handling, advanced hardware scrolling and collision detection, and up to 256 colours (as opposed to the C64's 16-colour palette).

Four sound channels were available, originating from the Atari 800XL's custom POKEY chip, which also handled peripheral input/output. It was co-designed by *Star Raiders* creator Doug Neubauer.

A number of classic cross-platform 8-bit system games were initially programmed for Atari computers, including *Ballblazer*, *Rescue On Fractalus!*, *M.U.L.E.*, *Archon*, *Boulder Dash*, *Dropzone*, and *Miner 2049er*.

Doug Neubauer reveals that Atari originally intended its computer line to have the same sound processor as the 2600.

The marketing, and consequently overall success of Atari's home computer line was catastrophically affected by the failure of the 2600 (VCS) console in 1983. The company had $400 million of unwanted console products in the pipeline in the face of a collapsing 2600 market, diverting corporate attention from the needs of the unfortunate Home Computer Division.

According to imdb.com, the repeated electronic beeping sound effect heard in the shuttle cockpit in the movie *Airplane II* is the sound of an Atari 8-bit computer's disc-drive booting up.

Year released: 1983

Original price: US: $299, UK: £249

Buy it now for: £15+

Associated magazines: Atari User, Page 6 (UK), Antic, ANALOG (US)

Why the Atari 800XL was great... Of all of Atari's 8-bit home computers it was the most competitive all-round package, with a full 64K RAM, built-in BASIC, great audio/visual capabilities and a decent, compact casing and keyboard. Programmers loved the quirks and cutting-edge capabilities of Atari's hardware, and some of the games software it spawned was truly ground-breaking. Much of the technical know-how gained in the design of the Atari 8-bit line went on to be used in the Amiga, and even today's PCs.

"COMPARED TO THE MORE POPULAR HOME COMPUTERS OF THE DAY, SUCH AS THE ZX SPECTRUM AND COMMODORE 64, ATARI'S COMPUTERS WERE OFTEN REGARDED AS HIGH-END, AND CAME EQUIPPED WITH AN EQUALLY HIGH-END PRICE TAG"

ATARI 800XL

OTHER VERSIONS WHEN ONE MACHINE ISN'T ENOUGH

Atari 65XE
This replacement for the 800XL, launched in 1985, features sleeker styling, an updated version of Atari BASIC, and a new memory management chip called 'Freddie'. There's little to make it a better buy nowadays than its predecessor, although its very similar big brother, the 130XE, is notable for its 128K system RAM (double that of the 65XE and 800XL).

XE Game System
Released in answer to Nintendo's NES, this was a modified 65XE computer in console guise (more contemporary looking than the rather dated 5200 console). Add-on features included a detachable keyboard, which was a little 'mushy' in comparison to those of the computer line, and a light-gun. It came with *Missile Command* and Atari BASIC built-in.

Atari 800XE
The last 8-bit computer to be produced by Atari, the 800XE was almost identical to the 800XL, but with the slim-line casing of the 65XE/130XE computers. It has other similarities to the 65XE, such as the inclusion of the 'Freddie' chip. The 800XE had a short life span, and was sold for only a year. It was popular in Eastern European territories such as Germany and Poland.

» The walking Atari Robot demo, which adorned many a computer shop window, demonstrating the impressive colour palette of the Atari computers.

for their time, sporting an unprecedented 128-colour palette, hardware sprites, four joystick ports, and cartridge, peripheral and memory expansion interfaces allowing unheard of levels of customisation. By the time of its launch, falling RAM prices allowed Atari to increase the 400's memory capacity to 8K. Eventually the 400/800 shipped with a standard 16K or 48K of RAM respectively.

Atari's marketing division made considerable efforts to publicise the advanced audio-visual features of its home computer systems, focusing on their unique custom architecture, fast full-colour graphic capabilities and multi-channel sound. Atari CEO Ray Kassar's mandate to the company's design engineers had been that the systems should be invaluable for home and business use and have the capabilities to play exciting, cutting-edge games. Unfortunately, the company's reputation as a videogame manufacturer backfired on its Home Computer Division, as high-end consumers opted for the more business-like Apple II rather than the Atari 800, and gamers found the high cost of the 400 prohibitive compared to the cheaper VCS console. However, Atari did have one considerably powerful ace up its sleeve to lure gamers to its 8-bit computer line.

"ATARI'S REPUTATION AS A VIDEOGAME MANUFACTURER BACKFIRED ON ITS HOME COMPUTER DIVISION"

Doug Neubauer, an Atari engineer and co-designer of the POKEY chip, had developed a game while working at Atari. Inspired by the generic '*Star Trek*' games he'd seen running on mainframe systems, Doug took advantage of the new Atari hardware, which he describes as "a quantum leap from the 2600" to update the game with a first-person 3D perspective. Not a huge logical progression by today's standards, except for one fact. No one had ever created a full free-roaming 3D game before. The result, *Star Raiders*, was staggering when first experienced in 1979 as one of the launch titles for Atari's personal computers. It became one of the first examples of a home computer 'killer-app' with many customers purchasing a 400 or 800 and a *Star Raiders* cartridge just to enjoy Neubauer's creation, among them a youthful Archer Maclean. "I saw *Star Raiders* and it just blew me away," he says. "Something very special was happening. I made it my mission to find out what." Another fan, Jeff Minter, couldn't wait to play it. "You can keep your *Elites* and *Wing Commanders*, for me the original *Star Raiders* will always be the best. 8K of sheer 6502 code poetry," he eulogises.

A further coup came in 1982, when LucasArts (then Lucasfilm) agreed to produce its first two hotly anticipated games, *Rescue On Fractalus!* and *Ballblazer*, exclusively for Atari machines. Both were developed on the Atari 800. "They wanted us to develop for the 2600 since it was their biggest installed base, but we were able to convince them we could do much more impressive games on the newer systems," says *Fractalus!* designer David Fox. "The target platform, initially, was the 5200. The other competing platforms at the time were the Apple II and C64," he continues. "The C64 didn't have much of an installed base then, but the Atari had a great set of chips, allowing us to squeeze a lot more out of the machine than we could on a computer like the Apple, which really had nothing like that." Ultimately, Lucasfilm's titles weren't enough to push Atari's computers into mainstream popularity, not being released until several years after the 5200 versions, and after the C64 had started to emerge as the 'it' machine for consumers. Lucasfilm eventually conceded and converted its games to the C64 and other platforms.

Around the time of the Lucasfilm deal, Atari was set to launch a successor to its 400/800 computers, with which it planned to phase out the older systems and boost flagging sales. Hitting shelves in January 1983, the Atari 1200 was intended as a more 'adult' computer system, and built on the successful 400/800 architecture, adding a professional-looking keyboard, 64K of RAM and improved peripheral support. The machine used a new graphics co-processor (GTIA) with an improved 256-colour palette. This had recently replaced the older CTIA chip in the 400/800 series and would be used in all future Atari 8-bit models. Designed to compete directly with the Apple II, the machine was unsuccessful in the competitive and soon-to-be-crowded market for business systems. There were also compatibility problems with some 400/800 software

» Atari's 1981 computer product-line-up, with the 400 and 800 personal computers taking pride of place in the centre of the picture.

» **Left:** Atari's 'killer-app' *Star Raiders* perched atop the second-generation 1200XL. **Right:** A magazine advert for *Star Raiders* made a point of highlighting its pioneering first-person play-view.

PROJECT WIZARD
Atari's hard-working engineering department always strived for an experimental approach to design, although a number of ambitious and unusual research projects only ever reached prototype stage. One was Project Wizard, an incredibly strange concept that would have caused somewhat of a stir in the industry had it ever seen the light of day. "It was the first, and only game controller that used your mind," says research engineer Tim McGuinness. "It was created in 1982, and was one of my projects. It used three electrical sensors on the forehead to control right-left motion of the cursor, and was designed for games like *Breakout*. 1,000 pieces were manufactured under the Atari Wizard Controller name for the Home Computer & VCS lines, but were never released for sale. But it was so cool. You put on a headband with three sensors, and you willed the controller right and left – it took about 10 minutes for most people to get control. Some could control it with blinding speed. I think the main reason it didn't go on sale was the psychological stigma of a computer reading your mind. It actually worked using simple electrical signals, through the skin, but I believe that was the factor. Especially in those days, when the public had no idea of how limited the power of their computers was…"

COMMUNITY THE BEST ATARI WEBSITES

Atarimania
www.atarimania.com
A fabulous resource, in a similar vein to World of Spectrum and Lemon64, this site is a wonderful place to start for an overview of Atari 8-bit hardware and software. Atarimania has an enormous database of downloadable games and software, with screenshots and full-colour manual scans for many titles. It also features the occasional developer interview.

Atari Museum
www.atarimuseum.com
A massively impressive site, with a whole wealth of information covering Atari's 30-year history. Its archives are brimming with first-hand interviews with Atari staff, technical documents, Atari magazine scans, old adverts and press releases, and a bucket-load of other assorted resources. You name it and, if it's Atari-related, it will probably be here somewhere.

Atari Protos
www.atariprotos.com
Another large Atari-oriented site but with a focus on prototypes of both released and unreleased software. Each piece of software has a link to a page about it, including screenshots, a description of how it worked, who programmed it and in what year. For games, the writer has reviewed how they played. If they were ports of another game, there are comparisons between the two versions.

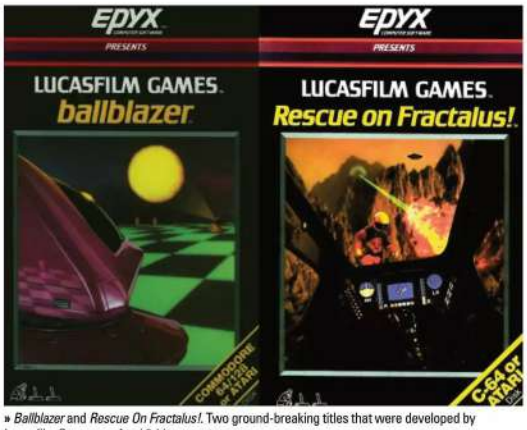
Atari Age
www.Atariage.com
Last but not least we have probably the most popular Atari website in existence, if its incredibly busy and extensive forums are anything to go by, that is. Admittedly, the main content does concentrate on Atari console hardware (particularly the VCS) but the 5200 section is useful, and as an Atari community it has, to our knowledge, no peers in all cyberspace.

titles due to the 1200XL's upgraded BIOS. The unpopularity of the 1200XL drove sales of the 800 as consumers raced to purchase the cheaper machine before it was discontinued. The system was an embarrassing flop for Atari, retailed for just four months before the plug was pulled on production. It was never sold outside the US.

Tim McGuinness, Atari's assistant director for corporate research engineering at this time, was a major player in the design of the 1200 and the later XL models. "Before the release of the 1200XL, Atari had VisiCalc, a few great databases, and a good word processor. In fact, many employees at the company used Atari 800 computers for all business work. But the early Ataris were marketed as home computers and by late 1982 we were months from the release of the IBM PC and first Compaq 'Lunchbox' PC." Despite the lack of consumer support for the system, Tim remains proud. "The 1200XL was the big step up from the 800/400 series," he says. "Later systems such as the 800XL were lesser progressions from an evolutionary standpoint." In fact, the machine may have been better received had Atari not been struggling financially. "The company was falling apart in the US, as the major corporate marketing engine was dealing with the collapse of the VCS console market. The home computers were a poor stepchild," says Tim.

In 1983, Atari went into direct competition at the lower end of the market. Squaring up against the C64, it launched the Atari 600XL and 800XL computers. Externally quite similar to the 1200XL, but abandoning the function keys and built-in demos, they were the first machines to include in-built Atari BASIC as standard. The 600XL/800XL came equipped with 16K or 64K RAM respectively and had two joystick ports. The Parallel Bus Interface (PBI) was added, allowing the addition of advanced peripherals. The machines were very much scaled down versions of the 1200XL, and to reduce production costs further following Jack Tramiel's takeover of Atari in 1984, much of the manufacturing infrastructure was moved to Hong Kong. The price cutting was seen as an effort to directly undercut Commodore, who had forcibly ejected Tramiel earlier in the year. However, production delays had meant that most of Atari's stock of 600XL/800XL machines had hit retailers too late to compete against the C64 over the Christmas 1983 period, and Atari never managed to catch up with its rival from this point on. Coupled with the collapse of the 2600, Atari was on a slippery slope, and would never again scale the heights of its ascendancy under founder Nolan Bushnell. Despite these problems, the Atari 800XL remains the company's most successful 8-bit computer.

Atari soldiered on under Tramiel with some modifications to its 8-bit computers, such as the XE range and the XE Game System, released in 1987 as a competitor to the NES. In 1992, with its 16-bit ST home computer locking horns against Commodore's Amiga, Atari finally dropped all support of its 8-bit line, 15 years after the series' conception and long past the peak of its popularity. Brilliant and technically ahead of their time, Atari's 8-bits tried to be jack of all trades but fell short of winning the battle with Commodore or Apple. Perhaps their potential as a gaming platform was never quite realised. "Although the Apple II was the obvious target, we also conceived of the 800 as the next-generation gaming machine," says Joe Decuir. "In my opinion it had no peer until the NES came out five years later in Japan." Adds Tim McGuinness: "We still use Atari technology in today's PCs. Our MS DOS floppies use Atari DOS format. USB is the grandson of Atari Serial (the interface between Atari peripherals)." Now that's certainly something to think about.



» *Ballblazer* and *Rescue On Fractalus!*. Two ground-breaking titles that were developed by Lucasfilm Games, on Atari 8-bit computers.

» Third-party support from publishers like Synapse, Epyx, Datasoft, First Star and Sierra was a great boost to the Atari home computer software catalogue.

DE RE ATARI

A long-held popular myth is that Atari deliberately held technical information on its 8-bit computers from third-party programmers, so that its internal developers would have an advantage. It's a rumour that ex-Atari software developer Chris Crawford (of *Eastern Front* fame) is eager to quash. "When the 400/800 were released, Atari executives assumed that the technical details of those machines would be kept secret, as they were with the VCS. Everybody in engineering knew that was absurd, but it took a while to convince them it would be better to encourage outside software developers. What did the trick was the early press reviews saying that the 400/800 were great machines but didn't have as much software as the Apple II. In December 1979, they issued a memo saying all technical documentation was now publishable. I had a number of friends in the software community and got on the phone to them. They wanted photocopies of the documentation, which I ran off myself and shipped to them. Thenceforth, all you had to do to get the documentation was to ask. We sent out exactly the same documents that we ourselves used. There was never any attempt to hold anything back after that. However, the documentation was not easy to understand. By December 1980 there were enough developers that I proposed a Software Development Support Group, to assist developers both inside and outside Atari. We wrote De Re Atari to make the documentation easier to understand." This legendary tome, published in 1982, was an invaluable aid to programmers like Archer Maclean, who likens reading it prior to creating *Dropzone* to a 'religious experience'. "If we'd started the Support Group sooner I think we could have beaten Apple to become the top 8-bit machine, and fended off the C64," says Chris. "But we didn't, which might be a good thing. If we'd beaten Apple, I might not be typing this on my Macintosh!"

» Two generations of Atari personal computers. The Atari 400 (top), Atari 800 (middle) and Atari 1200XL (bottom).

Thanks to Tim McGuinness and Mike Cartledge for supplying several machine images, and soundhog for the loan of Atari software.

ATARI 800XL

PERFECT TEN GAMES

The Atari 8-bit personal computers were privy to some of the most impressive games of their time, and the Atari 800XL is still a great platform on which to experience them. Here's a selection of ten of the finest titles to whet your appetite. If we've managed to miss any of your favourites then feel free to let us know by visiting **www.retrogamer.net/forum**

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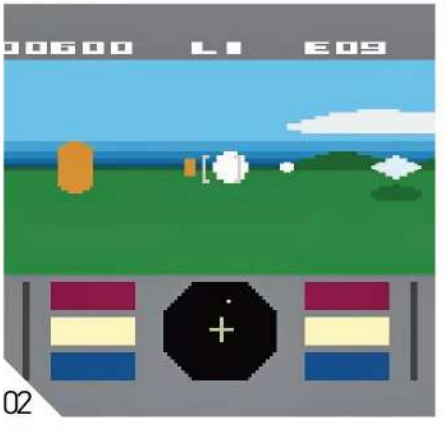

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STAR RAIDERS

- **RELEASED:** 1979
- **PUBLISHED BY:** ATARI
- **CREATED BY:** DOUG NEUBAUER
- **BY THE SAME PUBLISHER:** QIX

01 Hugely influential to many of those that witnessed it on Atari's fledgling personal computers, *Star Raiders* was the title responsible for shifting more Atari 400/800 machines than any other. The granddaddy of the *Elite*-style 'space opera', it was also the world's first free-roaming first-person perspective game. Updating the generic '*Star Trek*' games played by many a college student on mainframe systems, it was a striking mix of strategy and fast, immersive graphics that effortlessly sucked players into its universe. Criminally, the game's creator, Doug Neubauer, didn't make a single penny from *Star Raiders*, which he created in his spare time while he was employed as an Atari design-engineer.

ENCOUNTER!

- **RELEASED:** 1983
- **PUBLISHED BY:** NOVAGEN/SYNAPSE
- **CREATED BY:** PAUL WOAKES
- **BY THE SAME PUBLISHER:** MERCENARY: THE SECOND CITY

02 *Encounter!* was so good that when Jeff Minter first saw the game demoed at a computer trade show he hastily convinced author Paul Woakes to make it a full commercial product, giving birth to software house Novagen and paving the way for *Mercenary*. Playing out the mechanics of *Battlezone*, at what seems like around a thousand miles per hour, and with filled, solid objects zooming in and out of the screen, *Encounter!* was a technical marvel. And the impressively scary 'warp-sequence' between levels, which flings hundreds of enormous Ping-Pong balls at you while you struggle to avoid a collision, will still have you squirming in your seat like an Olympic rower with a scorpion in his pocket.

RAINBOW WALKER

- **RELEASED:** 1983
- **PUBLISHED BY:** SYNAPSE
- **CREATED BY:** STEVE COLEMAN
- **BY THE SAME PUBLISHER:** BRIMSTONE

03 *Rainbow Walker* is a unique and extremely playable title that is totally exclusive to the Atari 8-bit systems. Borrowing the colour-filling mechanics of *Q*Bert* and transposing them onto a chequered pseudo-3D scrolling play-field, its impressive z-axis scrolling utilises the Atari's unique graphic capabilities very nicely. Guiding our rotund hero Cedric across a series of aerial platforms fills in squares with a spectrum of colours, and moving up or down at either vertical extremity scrolls the patterned play-field towards or away from you. Enemy creatures can, and will, undo all of your hard work and must be avoided or 'pushed' off the rainbow by scrolling it until a gap appears beneath them. An attractive game and a really clever concept.

PASTFINDER

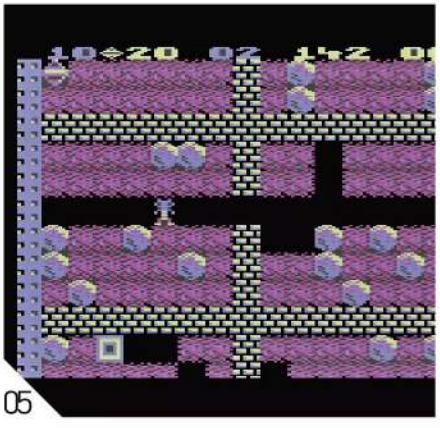
- **RELEASED:** 1984
- **PUBLISHED BY:** ACTIVISION
- **CREATED BY:** DAVID LUBAR
- **BY THE SAME PUBLISHER:** GHOSTBUSTERS

04 Despite a limited release by Activision (it remains one of the hardest titles to track down), *Pastfinder* is a great progressive shoot-'em-up which makes good use of the Atari's unique hardware. Helming a frog-like craft (the 'Leeper') your task is to explore a hostile planet while hunting down long-lost alien 'artefacts'. The scrolling forced-perspective terrain (resembling a top-down *Zaxxon*) is highly atmospheric, with great use of shadows, and the Leeper is a wonderfully charismatic creation with a superb control 'feel'. There's a huge *Star Raiders*-style strategy-grid to traverse in search of ancient loot, and guiding your 'space hopper' through the radioactive wasteland at breakneck speed is enormous fun.

BOULDER DASH

- **RELEASED:** 1984
- **PUBLISHED BY:** FIRST STAR SOFTWARE
- **CREATED BY:** PETER LIEPA
- **BY THE SAME PUBLISHER:** ASTRO CHASE

05 At the risk of being predictable we couldn't really leave *Boulder Dash* out of our Perfect Ten. Developed for the Atari 400/800 by Peter Liepa and Chris Gray, its beautiful gameplay (inspired by *The Pit*, an arcade game co-created by Andy Walker of Taskset fame) has been enthralling generations of gamers on various platforms for over 20 years, and its hero, Rockford, is a bona fide gaming icon. The dynamic physics, the predetermined 'rules' for enemy creatures, and the thought-provoking puzzle-like nature of the game were all masterstrokes. This then, the original creation in the lineage, is a must-play, with some outstanding and very challenging levels, which greatly deserve revisiting.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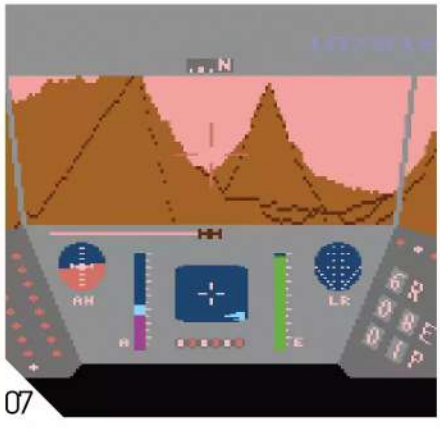
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DROPZONE

» **RELEASED:** 1984
» **PUBLISHED BY:** US GOLD
» **CREATED BY:** ARCHER MACLEAN
» **BY THE SAME PUBLISHER:** OUTRUN

06 With *Dropzone*, a young Archer Maclean took a large helping of *Defender*, a sprinkling of *Jetpac*, and cooked up a brilliant and blisteringly paced Jarvis-esque mega blast. Like a fine wine, *Dropzone* has aged remarkably well, and the original Atari version is most definitely the finest vintage on offer. Considerably bettering Atari's already very decent *Defender* conversion, Archer's magnum opus displays an incredible eye for detail and pushes the Atari hardware to the limit with its incredibly rapid smooth-scrolling, pixel-perfect collision handling, incredible particle effects and fantastic playability. Even in death the game rewards the player's ineptitude with a spectacular on-screen firework display.

RESCUE ON FRACTALUS!

» **RELEASED:** 1985
» **PUBLISHED BY:** ACTIVISION/EPYX
» **CREATED BY:** LUCASFILM GAMES
» **BY THE SAME PUBLISHER:** PITFALL!

07 If *Star Raiders* managed to shoehorn a small but significantly impressive corridor of space into an 8K Atari cartridge, *Rescue On Fractalus!* went a step further by cramming a whole planet into a 48K computer. Lucasfilm's first-person fractal flight-sim delivered an incredibly immersive experience, which many thought impossible to achieve. Its release was a defining moment for the Atari 8-bit systems it was originally designed for, wowing gamers on their first exposure to its amazing real-time landscape. The Atari's faster processor means that this is the definitive version of the game, running around one-and-a-half times faster than the C64 conversion.

BOUNTY BOB STRIKES BACK

» **RELEASED:** 1985
» **PUBLISHED BY:** BIG FIVE SOFTWARE
» **CREATED BY:** BILL HOGUE
» **BY THE SAME PUBLISHER:** SCRAPER CAPER

08 Bill Hogue's excellent sequel to his classic *Miner 2049er* is an outstanding platform romp that improves on its predecessor by some distance. Bob's mine now has a satisfyingly solid isometric angled look, and there's a multitude of new contraptions to help (or hinder) our hero. With 25 stages (more than twice the number of the original), and some extremely devious screens with a proliferation of slides, pipes and teleports to scramble your brain, *Bounty Bob Strikes Back* will test your platforming skills to the max but have you coming back for more. And top players can glorify their achievements on one of the most polished and appealing high-score tables of all time.

THE EIDOLON

» **RELEASED:** 1985
» **PUBLISHED BY:** ACTIVISION/EPYX
» **CREATED BY:** LUCASFILM GAMES
» **BY THE SAME PUBLISHER:** TONY HAWK'S PROJECT 8

09 Probably the most ambitious, original and downright atmospheric title of Lucasfilm's fractal triptych, *The Eidolon* was scaring the nappy-filler out of gamer's many years before *Doom* or *Resident Evil* were. By cleverly inverting the fractal mountains from *Rescue On Fractalus!* and *Koronis Rift*, Charlie Kellner created an incredibly engrossing first-person subterranean adventure with strange revelations and fascinating beasties lurking around every corner. The creatures themselves are all great characters, from comical lowly minions to the game's famously impressive dragon guardians. And you don't even want to know what monstrosity awaits you at the end of the final level.

YOOMP!

» **RELEASED:** 2007
» **PUBLISHED BY:** N/A
» **CREATED BY:** MARCIN ZUKOWSKI AND TEAM
» **BY THE SAME PUBLISHER:** N/A

10 Imagine playing *S.T.U.N. Runner* (apparently we're not supposed to mention *Trailblazer*) with a bouncing ball in a psychedelic tubular playing field to a stonking soundtrack. Actually, imagine no more, just grab *Yoomp!* instead. This excellent title was created by a Polish programming team, and was inspired, according to its developers, by an old Bullfrog DOS game called *Tube*. Whatever its influences, however, this freeware masterpiece deserves to be experienced by as many players as possible, which is why we've it's been included here. Fire it up, grab a joystick, disengage your mind from the niggling background music of reality and prepare to enter the zone.

AUTO
SEGA
START
Panasonic
A
B
C

Controlling History

From toggle switches to thin air, we attempt to chart the evolution of the game pad, and explain how it has driven the medium in more ways than you might think

While their looks and sounds have changed dramatically over the past three decades, the ways in which we play videogames have only recently started to evolve significantly by comparison. The joystick, the fire button, the paddle, and the quirky game peripheral have all been around since the dawn of the industry, and the innovative control methods to have emerged following the Seventies can pretty much be counted on one hand.

Developed by American physicist Willy Higinbotham, the quaintly titled 1958 game *Tennis For Two* was one of the first electronic games ever produced. Built in a New York research facility, the game was a simple recreation of tennis, viewed from a side-on perspective, and its graphics were displayed through an oscilloscope. Surprisingly, considering the game's age, *TFT* demonstrated an intelligent control scheme that suited the style of the game: played by two people, each player used an analogue control box that contained a fire button to strike the ball and a rotatable knob that could influence its trajectory.

Of course, *TFT* was a rare exception. Back then, many early

» The diminutive Cheetah Bug; its novelty looks belied great design and a small, responsive stick, making it an instant winner with gamers.

Tom Taylor

Ergonomics expert Tom Taylor, a teacher of product and graphical design, explains to us what features make a good game pad

RG: What do you think about early joypads like the 2600, ColecoVision and NES pads from an ergonomics point of view?

TT: The ergonomics of the Atari 2600 and NES game pad were truly appalling. I remember playing on them and having to stop every once in a while due to cramp. I believe that ergonomics did not enter into the design process. If you look at what Microsoft and Sony have achieved with the modern controllers, it's beyond belief why Nintendo thought that a rectangular design was going to be comfortable to hold.

RG: In your opinion, what makes a good joypad?

TT: To answer this I think you have to look at examples such as the early Microsoft Sidewinder, Xbox and PSone controllers. Here we start to see the use of anthropometric data to help the designers create the modern controllers we have today. For me, what makes a good controller is something I can use for hours on end and feel no discomfort, but also something that my six-year-old son can pick up and use with no difficulties.

RG: How important has analogue control been for videogames?

TT: Hugely. Can you imagine trying to play *Call Of Duty* with a digital thumb stick? You would have no fine movement, and we would still be playing games like *Pong* and *Donkey Kong*. Both are great games even now, but for pure interactivity, an analogue controller is a must.

RG: Which company has a history of making the best, most ergonomic console pads, in your opinion?

TT: For me it has to be Nintendo. Okay, the NES joypad was a true horror to use. If you then look at the development they have put into game pads over the years, with the Super Nintendo joypad, N64 and finally the Wii Remote, for me they are a clear winner.

RG: What would you say was the best controller from the past?

TT: This is an easy one: the N64 due to its clever three-handed design – one for digital control and the other for analogue. The number of hours I spent using it to play *Mario Kart 64* in comfort is scary.

RG: What do you think is the best joypad currently on the market?

TT: Yet again, another easy one: the Xbox 360 controller. I can play for hours using it with no discomfort. And my six-year-old son can pick it up and use it with ease. It's a great example of anthropometric data being used to create an ergonomical design that can be used by people of all ages with different hand sizes.

RG: How important do you think motion-sensor controllers will become?

TT: I think they will always have their place in gaming, but for serious games I don't think they can replace the game pad. I don't see how they can build in the accuracy or range control that an analogue thumb stick is capable of.

» The Quickshot 130F featured an auto-fire button plus four input settings to allow Atari/Commodore, MSX, Amstrad or Sega machine functionality.

games and control schemes were designed using whatever was available to engineers at the time. In the case of Steve Russell's seminal 1962 videogame *Spacewar!* – the world's first built-for-purpose videogame – the game ran on colossal PDP-1 mainframe hardware, and players used five toggle switches on the machine to operate the left and right rotation, thrust, firing and hyperspace controls of the game's two spaceships. However, realising that this control method proved cumbersome and awkward, engineers later created standalone control boxes, each containing two toggle switches and a single action button. Hooked up to the PDP-1 with a wire, these boxes would become the earliest examples of a dedicated game controller.

By 1971, the first wave of commercial coin-operated videogames were beginning to appear. First to be released was Bill Pits and Hugh Tuck's *Galaxy Game*. The game was a reprogrammed version of *Spacewar!* that ran from PDP-11/20 hardware but was mounted inside a fibreglass unit, giving it the appearance of an arcade machine. In the same year, Nolan Bushnell also released his revision of *Spacewar!*, *Computer Space*. However, instead of toggle switches, Bushnell further simplified the control scheme using buttons for input.

The early Seventies also saw the advent of the paddle controls. A variant of the rotatable knob controller first seen in *TFT*, the paddle, which works using a potentiometer to vary the output of the voltage levels to signal movement, was first used for a commercial videogame in Atari's *Pong*, in 1972. And like *TFT*, the simple control scheme – no buttons, no dials, just a simple paddle used to move the game's in-game paddles up and down – went hand in hand with *Pong*'s simple gameplay, and allowed its cabinet to look sparse and uncluttered so as not to alienate potential customers who were green to videogames.

Designed by Ralph Bear, the Magnavox Odyssey (1972) is responsible for beginning the home videogame market. The first ever multi-game console, the machine worked in a similar way to the oscilloscope graphics of *Tennis For Two*: it basically projected light sources on screen that could be moved by players to play basic videogames, and used various overlays that rested on television screens to give its games colour and graphics. Replicating the strange space-age shape of the console itself, the Odyssey controller featured two analogue paddles positioned either side of its toaster-shaped design: one to allow vertical movement, and the other horizontal movement of one of two differing sized glowing light cursors that appeared on screen. A third dial, added to the crest of the horizontal paddle, allowed manipulation of a third light source that represented balls and torpedoes in some Odyssey games. Magnavox also released an unsettlingly realistic light gun for the Odyssey. Known as the Shooting Gallery – it came packed with a selection of shooting games, hence the name – it worked by detecting hits against light sources on the television and was the first commercial game peripheral released for any home console.

The most notable controller to come out following the Odyssey's release was the Fairchild Channel F's Hand-Controller in 1976. The Hand-Controller took the appearance of a short, baseless joystick

» Sega was one of the first manufacturers to consider ergonomics in controller design.

A Musical Interlude

PaRappa has a lot to answer for...

Drums

FIRST SEEN IN: TAIKO: DRUM MASTER
YEAR RELEASED: 2004

While many will remember angering the neighbours using the bongo drums that came packed with *Donkey Konga* (seen here), the drum peripheral was introduced by the popular Japanese rhythmic game series, *Taiko no Tatsujin* (*Taiko: Drum Master* in the West). Released on the PlayStation 2 in Japan and the US, the game came with a plastic replica drum called a TaTaCon, and players performed actions by striking its pressure-sensitive face panels using plastic drumsticks that resembled Cheestrings.

Guitar Controllers

FIRST SEEN IN: GUITARFREAKS
YEAR RELEASED: 1998

While popularised in recent years by *Guitar Hero* and *Rock Band*, it was Konami that introduced the world to the delights of plastic guitar-shaped controllers when it unleashed *GuitarFreaks* in 1998. Guitar controllers are essentially all very similar in their design: buttons on the neck to replicate the playing of strings and chords, and a fret lever to simulate the strumming of a real guitar. Later models also include a whammy bar, and a series of secondary buttons for solos.

Maracas

FIRST SEEN IN: SAMBA DE AMIGO
YEAR RELEASED: 1999

Debuting in arcades, before making its way into the home via the Dreamcast, *Samba De Amigo* was a colourful rhythm-action game that found players having to match on-screen hand gestures – shakes and poses – using replica maracas. While the arcade maracas worked using magnetic sensors to pick up movement, the home version operated using a sensor bar positioned just in front of the player's feet. It picks up movement using ultrasonic transmitters found on the wire of the maracas.

that was bolted onto a long black hand grip. Predating Atari's VCS Stick by a year, it is one of the earliest examples of a joystick-style controller, and is also one of the first to be designed with ergonomics in mind. The Fairchild's short triangular-shaped stick could also be used like a traditional joystick, or rotated to work like a paddle. It was pressure-sensitive and could be pushed down to act like a fire button, and pulled up like a bottle opener to signal another input to the console.

But it was Atari that would really popularise the joystick controller. The Atari VCS stick (1977) remains one of the most iconic game controllers ever designed. Comprising a dark black base housing a single digital red fire button and a cylindrical four-way joystick positioned in its centre, its simple design may not have been much to look at, but it hid its own benefits. Realising that the VCS would be the first time that many people would ever see a videogame, let alone actually pick one up and play one, Atari purposely packed the VCS with a simple control scheme that users could easily pick up and use. Additionally, the VCS stick's all-purpose feel was designed to cope with the multitude of different games that would later appear on the console.

Atari's VCS console was also notable for having a wide range of control peripherals. In a bid to replicate an authentic arcade experience for the console's arcade ports, Atari later released the Paddle Controller for use with games such as *Pong*, *Breakout* and *Warlords*, and the Driving Controller – basically identical to the Paddle Controller, except it was sold individually rather than in pairs – for use with racing games *Indy 500* and *Race*. It also released the Keyboard Controller, for use with the programming software tool Basic Programming and a small number of educational software titles.

> **"Magnavox's unsettlingly realistic light gun for the Odyssey was the first game peripheral"**

By the end of the Seventies, controller designs were becoming more complex. The Intellivision controller, for instance, featured a digital control disc with 16 directional positions and a 12-button numerical pad, plus four additional action buttons positioned on its sides. The number pad made use of overlays that explained the function of each button for their respective games. Coleco Industries later imitated this style of controller for its ColecoVision console in 1982, but replaced the control disc with a short joystick. To compete with Atari, Coleco also released a number of peripherals for its machine, including a steering wheel controller; a trackball, which came packaged with the games *Victory* and the *Centipede* clone *Slither*; and the Super Controller. Held like a pricing gun, and with finger triggers forming the fingery bit of the hand grip, the weighty Super Controller was produced specifically to play with the console's *Super Action* series of sport games.

By the early Eighties, the videogame industry was becoming flooded with game consoles and low-budget videogames as electronic manufacturers scrambled to capitalise on demand – one of the many contributing factors of its eventual collapse in 1983. And the glut of peripherals, add-ons and newfangled control schemes was only

Novelty Items

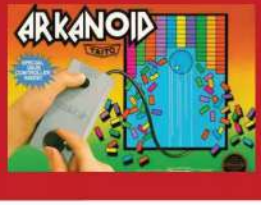
We reflect on some of the most barmy game controllers to ever find a release

Atari Track & Field Controller 1984

This button-basher's wet dream was released with the Atari 2600 port of *Track & Field*. Its arcade stylings featured three action buttons – two white 'run' buttons and a single red one to perform a jump or throw – and was compatible with other Atari games and machines, but control was obviously restricted to just left, right and shoot. The unit was also sold separately.

Arkanoid (Vaus) Controller 1987

Another peripheral designed to offer the authentic arcade experience, the *Arkanoid* Controller – or Vaus Controller, derived from the name of the ship in the game – was released by Taito to offer a precise paddle control system for the NES port of *Arkanoid*. Three variants were released, including one that allowed connection of another controller for multiplayer gaming.



Namco neGcon 1994

Released for the PlayStation, Namco's twistable neGcon controller was designed specifically for racing games. The most notable aspect of the neGcon pad was that it featured two analogue face buttons – the standard PlayStation buttons are digital – and the two halves of the pad could be twisted to offer an analogue steering input, offering finer precision for handling, acceleration and braking.

Steel Battalion Controller 2002

With more buttons than the Hubble Space Telescope, the *Steel Battalion* Controller was released by Capcom for its simulator-style mech battle series. With over 40 buttons, twin control sticks and even pedal controls, this imposing beast was an essential purchase for fans of giant robots, but it didn't come cheap, retailing with the game at £140. It was also released in limited numbers.

Resident Evil 4 Chainsaw Controller 2005

Possibly the most pointless shaped controller ever released, this oddity by peripheral manufacturer Nuby Tech was likely to only hold appeal among die-hard *Resident Evil* loyalists. While a neat-looking collector's piece, as a control device it's unsurprisingly unwieldy and awkward. It was released for the GameCube and PlayStation 2.

adding to its already-saturated state. It's here that we turn our attentions to a company called Nintendo, which, in 1985, would help resurrect the videogame industry in North America by stripping things right back and simplifying things again – including control schemes.

The origin of Nintendo's D-pad (or directional pad) can be traced right back to its Game & Watch electronic games – one of Nintendo's earliest forays in electronic entertainment. These cute, pocket-sized LCD games were designed to offer true portable gaming, but through their transportable design, they would also come to revolutionise the design of game controllers forever. Realising that incorporating a joystick into the design of the G&W would impede the pocket nature of his new product, Yokoi looked to a more portable control system and eventually settled on using tiny rubber buttons. Not only would buttons allow the Game & Watch to retain its portability, but they also offered a simple and responsive control method – pressing buttons requires less physical movement than moving a joystick – that suited the twitchy but simplistic nature of the G&W games. This control scheme was refined further in 1982 with the release of the G&W title *Donkey Kong Jr.* It featured four action buttons that were positioned in a cross position to visually correspond with the movements up, down, left and right, and the D-pad was born. Nintendo would patent this revolutionary and unique cross-shape button design, and incorporate it into every one of its control pads from that moment on.

While often criticised for its angular look, the Famicom/NES joypad was actually very intelligent in its design. Borrowing the D-pad and simple control scheme of the Game & Watch games – two action buttons and Select and Start to toggle between game modes – the NES pad's simple layout, like Atari's VCS stick and *Pong*'s paddle controls, would find appeal with those unfamiliar with videogames. They also suited the uncomplicated nature of those early Nintendo games, and by limiting the NES pad to just two action buttons, it meant that most developers were forced to make games for the NES easy to pick up and play. It was owing to the success of the NES that the game pad then became the preferred and adopted control method for console manufacturers, with many companies quickly submitting their own take on Nintendo's seminal D-pad controller. In 1986, Atari released a comparable controller for the 7800, featuring two action buttons and a cross-shape D-pad that had a hole in its centre to allow attachment of a small screw-in joystick, and Sega released a similar controller for its Sega Mark III/Sega Master System. The SMS pad featured two action buttons, and an eight-way D-pad. Known as the D-button as its square shape gave it the look of a button, early versions of the pad also allowed the attachment of a small joystick.

Finally, there was the PC-Engine controller (1987). The most comparable

» The six-button SNES pad is a seminal entry in the evolution of controller design.

» Atari released a variant of the Fairchild Channel F control stick for its VCS. Named the Video Command, it differed in that its stick wasn't rotatable and had a single fire button on its hand grip.

» The Atari VCS stick may have been stiff and clumsy, but it proved functional and accessible to green gamers.

joypad to the NES controller in terms of look, it featured two action buttons, Select and Run buttons, and a circular D-pad. Later iterations, such as the controllers that came packed with the SuperGrafx and Turbo Duo, added three-way turbo switches for each of their action buttons.

Meanwhile, throughout Europe and parts of North America, thanks to the booming microcomputer and arcade industries, joysticks still had a strong following. Like Nintendo, many joystick manufacturers had realised that stripping things back was gainful, and produced basic but functional joysticks to suit the needs of gamers. Most of these designs were reminiscent of the early Atari VCS stick, and featured DE-9 connectors, digital sticks and two digital fire buttons for left or right-handed use. Movement in early digital joysticks worked from leaf switches, where the joystick would register movement whenever the stick was pushed in the desired direction, causing two metal connectors to meet. Over time, though, these leaf connectors would bend, causing connections to fail unless the joystick was opened up and the connectors readjusted, understandably causing many headaches for arcade operators. The introduction of micro switch technology in joysticks would help solve this problem. Micro switches were more robust and, as they could be triggered with very little physical force, were also more responsive. As well as the change from leaf to micro switch technology in joysticks, the early Eighties saw the first analogue joysticks emerge with the release of the Vectrex and Atari 5200 (both 1982) joystick controllers. Unlike digital joysticks, which registered movement whenever a connection between two connectors was made, analogue sticks worked using potentiometers, like the earlier paddles, to offer a continual input of activity, and better precision.

“ The Game & Watch would come to revolutionise the design of game controllers forever ”

In 1989, British peripheral manufacturer Konix, maker of the popular Konix Speed King stick, planned to enter the console market with its innovative Konix Multisystem – a television-based console that took the shape of a controller. The console was designed with the assistance of Cambridge-based Flare Technologies, which would later have a hand in the development of the Atari Jaguar, with Konix coming up with the console's unique three-part design – the main

» Many companies, such as Cheetah, imitated the Atari VCS stick in their joystick design.

» The PlayStation pad is up there with the best ever designed, hence the design's longevity.

system could transform into a steering wheel, flight yoke or bike handlebars, and it also came with a gaming seat boasting surround sound and haptic feedback technology, predating Nintendo's N64 Rumble Pak peripheral by eight years – and Flare coming up with the processor and hardware. Despite boasting some impressive specs and support – it featured a 16-bit 8086 processor and 3D capabilities – plus planned third-party software from high-profile developers, including Llamasoft, EA, Ocean and Argonaut, Konix experienced trouble in trying to raise the money to get the console to market, forcing its release to be pushed back until it was eventually scrapped altogether.

Entering the Nineties, many console manufacturers finally started considering ergonomics in the design of their game pads. The Sega Mega Drive control pad (1988) not only slotted into hands better, thanks to its kidney shape, but also featured an ergonomic button layout. The pad had three action buttons, and Sega's decision to go with this setup was likely a result of its early arcade games. *Altered Beast*, *Golden Axe* and *Shinobi* all featured three action buttons on their arcade cabs, and they were positioned diagonally to follow the natural resting position of the right thumb: another defining moment in controller design that would quickly go on to become the standard. The Mega Drive controller also featured an improved version of the SMS D-button. More similar to the NES D-pad, the Mega Drive version added a cross-shape detail, affording more precision to the user, and was set slightly into the pad to provide a neat gully for left thumbs.

In 1990, Nintendo answered back by releasing one of the most popular and copied control pads ever made. A subtle tweak on its NES pad, the SNES

Wyn Holloway

We track down Wyn Holloway, founder of the British computer peripheral company Creative Devices Research, better known as Konix, and designer of the popular Speed King joystick

» The Konix Speed King revolutionised joysticks, and how we played *Daley Thompson's Decathlon*.

RG: You started out running your own computer shop, so why did you decide to move into joystick manufacturing?

WH: I used to run a computer shop in the Eighties, and the joysticks that were on the market were very cheap and cheerful. And our biggest problem was joystick returns – I remember the release of *Daley Thompson's Decathlon*, it was an absolute nightmare. I decided to do something about it.

RG: How did you come up with the handheld design of the Konix Speed King?

WH: I noticed the sticks used to have suckers on them. We used to have a 'try before you buy' section in the shop, and the kids could come in and try the computer or games before they purchased. But instead of setting the joystick down on the top where we set it all up, the kids used to hold them, and they'd be bouncing around all over the shop.

RG: And what about the actual look of the Speed King?

WH: So I bought some Plasticine and moulded it into a handheld unit, and then I thought, 'Right, I've got to design something to fit inside that shape', and looked into micro switches and I approached a French company who used to supply them to the aviation industry. They were about £1.40 each, but I managed to get the price down to 40 pence by agreeing to place a significant order. Then I worked in my garage and got a prototype working and from that we had the tool made. That was it.

RG: What sort of reaction did you get when you showcased the joystick?

WH: Initial reaction wasn't all that promising. I attended the Consumer Electronics Show in London and had made 100 to take with me, but I didn't sell any. We found out this was down to the packaging. We didn't have much money and the boxes we made were rubbish, and customer perception was that if the packaging was rubbish then so was the product. So we ended up raising a bit of money, rethinking the packaging and sorting out a few problems with the moulding; we then did a distributor deal, managed to get the price to a competitive £12.99 – the same retail price as the cheaper joysticks, so they were competitive – including a two-year warranty.

From then we went to another show, and we set it up with *Daley Thompson's Decathlon*, and the kids loved it because of the accuracy. We then did a deal with a European group of distributors, which ensured our buying power was better, and they gave me an order for 500,000 units. We took on a little factory and expanded the company from there. Then we met Epyx at another show, went over to the States and met Toys R Us, Sears and Macy's, and Epyx gave us an order for 3 million units. In one year we went from unknown to one of the largest joystick manufacturers in the world.

RG: Were you ever worried that the Speed King would alienate left-handed gamers?

WH: Yes we were, and we ran a competition in a magazine for left-handed people, and over 80 per cent of left-handed people told us not to change it. What came back was that the triggers were brilliant for left hands, so what they would do is instead of moving the stick and holding the base, they'd move the base and hold the stick.

controller was dog-bone shaped, compact, and its iconic design and clean button layout is still used in game pads today. As well as being more comfortable to hold, the controller featured a softer D-pad and four diagonally positioned face buttons that were complemented by two shoulder buttons placed at the top of the pad. A canny design choice by Nintendo, the two bumper buttons gave the controller a total of six buttons without it looking cluttered. Furthermore, having twice as many action buttons as the Mega Drive proved advantageous to the Super Nintendo in the wake of six-button games such as *Street Fighter II*.

The eventual return to the console market by Atari, with the Atari Jaguar in 1993, resulted in one of the most disastrous high-profile console releases in history. Citing that the machine was difficult to program for, Atari's 64-bit beast failed to gain support from third-party developers. And learning nothing from the boom and bust nature

"The SNES pad's iconic design and clean button layout is still used in game pads today"

of the videogame industry following the crash of 1983, Atari did itself no favours by releasing its new machine at a time when the console market was once again looking saturated. But the problems didn't end there. The Jaguar also featured one of the most ill-conceived game controllers ever designed. Shaped like a haggis, the Jaguar controller was bulky, ugly and cumbersome, and its dark black case and red buttons, which gave it the aesthetic of the old Atari VCS stick, made it look old and dated from the outset. The Jaguar controller featured all the normal control elements that gamers had come to expect: a D-pad, two Start buttons and three diagonally positioned action buttons. However, owing to Atari's decision to add an interfering numerical pad to the design – the intention was to make use of instruction overlays much like the Intellivision and ColecoVision controllers – the direction and action buttons were pushed to the top of the controller, making its layout feel awkward and cumbersome.

By the mid-Nineties, 32-bit consoles and their respective controllers were appearing. For the Sega Saturn controller (1994), Sega would base the design on the six-button version of the Mega Drive controller, which it had packed with Mega Drive 2 consoles. As well as being thinner and shapelier, the Saturn pad featured two fantastically ergonomic shoulder buttons. In North America and Europe, however, the Saturn controller underwent a transformation. As well as a change in colour to tie in with the black look of the Saturn in these territories, it was chunkier, featured a different, spikier D-pad, and those fantastic ergonomic shoulder buttons were planed off so as to tidily integrate them into the shape of the pad.

In 1994, a determined Sony finally entered the videogame hardware arena with the PlayStation. Given Sony's infamous past with Nintendo – Sony's contract to manufacture the SPC-700 sound chip for the Super Nintendo, the ill-fated SNES PlayStation project, and then Sony's humiliation following the bombshell that Nintendo was in cahoots with Philips to manufacture the SNES CD-ROM drive – it's little wonder that the PlayStation controller shared more than a passing resemblance to the SNES pad. Sony had invested a significant amount of cash into the SNES PlayStation project, even getting as far as the prototype stage, so it's little surprise that it mimicked Nintendo's popular SNES pad design. The PlayStation controller is essentially just a more ergonomic SNES pad, adding two additional shoulder buttons (L2 and R2) and incorporating two vertical hand grips into its design, offering more comfort and stability.

With the 32-bit generation came a growing trend for polygon-pushing 3D games. And while D-pads worked brilliantly in flat worlds, they weren't really equipped to handle the depth and precision required to steer avatars in 3D ones – remember how dire the controls were in *Resident Evil*. 1996 marks the year that all the big console manufacturers turned to analogue sticks for help. In this year, Nintendo released

» What a glorious sight. More sticks than you can shake a rod at.

» The multi-use N64 pad remains one of the most inventive controller designs ever released.

Jon Hare

Jon Hare reveals to us his favourite examples of good control in videogames, and why intuitive control is essential

RG: Looking back over the years, what game controllers have impressed you most and why?

JH: Personally, I think certain peripherals suit different games better, so I would not say I have favourite controllers but more favourite applications of controllers. My number one favourite example of this is the archery in *Wii Sports Resort*. This, to me, is as perfect a simulation of a sport as you are ever likely to find. It does not have a lot of wow factor, but it is almost perfect in its execution. Second is the old *Centipede* arcade machine with the track ball; I loved that when I was 14. Third favourite is *WarioWare*. This game really utilises what the DS can do; a brilliant piece of design. Worst controller is the horrible Mac single-button mouse. I just don't get it at all.

RG: How significant a part do you think intelligent controls play in terms of good game design?

JH: Good controls play a massive part in game design. On all of our old C64 and Amiga games, we always did the controls first before everything else. It was only the world of writing design documents to justify getting paid that really changed this.

You must remember game controls are directly tied into on-screen feedback of events. Often, when moving a controller in a direction, it is unclear when you have reached your destination; it is only on-screen clues, sound effects and force feedback that will give you notification of successful or disastrous execution of controller manoeuvres. They also need to be managed and massaged into movement that is acceptable to the players. Too many green designers make the mistake of thinking realistic movement means accurate representation of the exact movements using the controller. However, this policy is flawed. If you want to emulate what really happens, you'd get the player to walk, not push a little plastic stick forward. Also, to maximise other areas of the game, we sometimes need to be able to predict certain elements of the way characters move on screen. Controllers that give players apparent full control are great, but often it is an illusion. Being a great illusionist is all part of being a great games designer or programmer.

RG: All of your titles featured very simple controls. Was this something you always tried to rein in with your games?

JH: My philosophy to games is pretty simple: the game has to be easy to get, shouldn't need too much explaining, and be highly intuitive. Our games were designed to guess how the player was most likely to assume a certain control would work and then try to deliver what he expected. Nowadays people do this too, but in the main they do it by copying the control protocols of other games in similar genres. In Sensible's time, we were allowed to make up these new rules for control mechanisms without fear of alienating the players.

RG: What is your opinion on the current trend of motion-sensor technology? Do you feel that it has a bright future?

JH: Well, I have made two Wii games so far and I have seen Natal in action. The biggest gripes are sensitivity and speed. Certainly the [MotionPlus] for the Wii controller seems to make a bit of a difference now to certain types of spinning and aiming movements, but it is nothing more than it should have been in the first place. Natal also seems a little slow and woolly at present, although I am sure it will tighten up. Even once you overcome delay problems, though, you still have to overcome the bigger problem of foot movement and how to emulate it on a hands-only controller. You can use a stick to walk around, but it feels weird when you are mixing it with more realistic hand movements. I think the current set of movement-based controllers are a fad; however, I think the next phase of motion-based controllers could be much better, maybe in about four years.

RG: Do you think the industry will ever move away from hand-based control pads entirely?

JH: No, I don't think it can. The on/off precisely timed nature of the button click is too accurate and convenient to ever be ditched entirely. People must remember hands-free movement controls don't give us real-life controls; they give us another variant of interpreting movement of our bodies into instructions to change the next animation frame of objects drawn on computer screens. This is an inherently unnatural process whichever way you approach it.

» The Jaguar pad was a perfect example of poor controller design. It was cumbersome, crowded, and a little dated in the looks department.

▷ the N64 to the market, and it came with one of the most innovative controller designs ever seen. The pad's unique M shape allowed it to be held in three different ways, and its unique analogue stick – or 'Control Stick', as it was coined – offered a precise control method that was perfect for platform games such as *Super Mario 64*, and it's understood that Nintendo designed the N64 controller around this game, while its yellow C-buttons for controlling in-game cameras proved invaluable in games such as *GoldenEye* and *Zelda: Ocarina Of Time*. The N64 controller was also the first pad to feature haptic feedback through the attachment of a Rumble Pak peripheral. Launched in 1997 to coincide with the release of *Star Fox 64*, the Rumble Pak could be attached to the memory cartridge slot underneath the pad and exerted a physical output on the user to offer a heightened sense of immersion.

In 1996 Sega also released a custom analogue controller for its groundbreaking Saturn game *NiGHTS Into Dreams*. Its large, round design was carried over to the design of the Dreamcast controller, and it's the design that Microsoft would ostensibly base its original Xbox controller on. But Sony beat both Sega and Nintendo to the punch by releasing the Analog Joystick flight stick peripheral for the PlayStation. Sony followed this up with the PlayStation Dual Analog Controller a year later, which added two analogue nubs to the original PlayStation pad to offer precision control. The Dual Analog Controller's successor, the DualShock, then incorporated force-feedback through two motors that provided soft and strong vibrations, and rubber-textured analogue nubs that could be pressed down to actuate two additional inputs (L3 and R3). Sony would later go on to release a total of three variants of the DualShock; one for each of its three games consoles. The PlayStation 3 variant, the DualShock 3, was a wireless controller that featured tilt-sensor technology. It was the successor to the PS3's Sixaxis Wireless Controller, a lightweight tilt-sensor pad without the vibration technology.

Until now, all of Nintendo's controller designs had brought something unique and innovative to the table. However, its next controller would memorably buck this trend. While well-constructed and ergonomically sound, the GameCube pad was essentially a Swiss Army knife in terms of controller design that tried to encompass all the control schemes that had come before it. As a result, trying to accommodate the myriad controls that gamers were familiar with meant the pad suffered by looking cluttered and unwieldy. Similar in design to the DualShock, the GameCube pad juggled eight buttons, two analogue sticks – one stick was a variant of the N64's C-buttons – a D-pad and a built-in rumble motor. And its derivative and overtly

» Some joystick designs, such as the QJ Superstar, based their look on arcade control panels.

It's been motion-able

Think arm-waving began with the Wii? Then think again

Mattel Power Glove

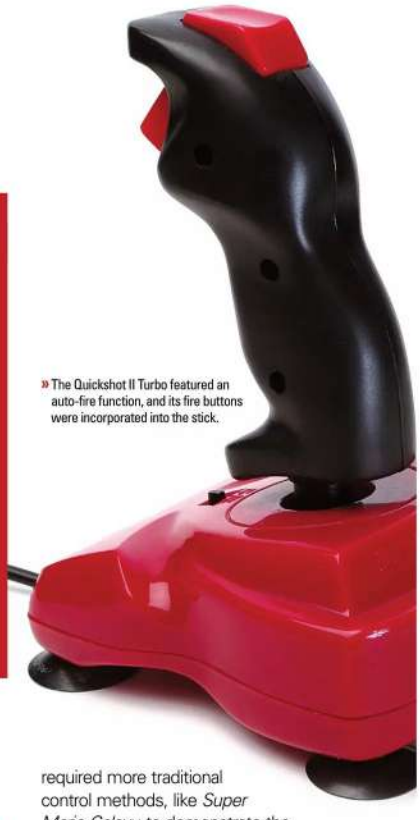
Released by toy company Mattel, the Power Glove was the first example of a game controller to use gestural recognition technology, making it a precursor to the Wii Remote. Criticised for being needlessly complex to work and its motion sensor technology feeling imprecise, despite big claims and finding endorsement in the movie *The Wizard*, the Power Glove failed to find appeal in the marketplace.

Brøderbund U-Force

Better known for its software output, Brøderbund also released this unusual motion-sensor peripheral for the NES. Using two perpendicular infrared sensors, it allowed NES owners to theoretically control games using hand gestures. In reality, though, trying to actuate simple movements like moving left or right with the device proved a real headache, and NES owners swiftly returned to their reliable D-pads.

Sega Activator

On paper, the Sega Activator sounded brain-meltingly brilliant. It was a beat-'em-up games peripheral spliced with what looks like a UFC play mat. The player placed the octagon-shaped device on the ground and then stood inside it, punching and kicking the air and using infrared beams to register hits. Low hits registered a kick in the game, while high ones triggered a punch, and the player's actions were mimicked on screen… ish. Sadly, the Activator's beams were too sensitive and the software applications too limited to be deemed anything but a disappointing experiment.



» The Quickshot II Turbo featured an auto-fire function, and its fire buttons were incorporated into the stick.

"The Wii marked a watershed moment, and its ultimate influence is impossible to tell"

complex nature also went some way to scupper Nintendo's creative flair. Shigeru Miyamoto echoed this observation in an interview with *Famitsu* magazine in 2008.

"We made [the GameCube controller] as a culmination of everything leading up to it, but it really underwhelmed. This line of thinking doesn't give us anything else to shoot for, does it?" admitted Miyamoto. "The GameCube controller is a product of us feeling that, without this or that, people wouldn't be able to play the games we make. But then we realised that was a problem; that we were thinking based on that controller as the premise."

But Nintendo of course returned with an innovative control scheme for its next console. Likely considering the popularity and success of computer vision and gesture-recognition technology seen at work with the Sony EyeToy, and having already tested the water with gesture recognition in games – unsuccessfully in the Eighties with half-baked NES peripherals such as Mattel's Power Glove and Brøderbund's U-Force, and far more successfully with the touch-screen and stylus controls on the DS – Nintendo decided that a demand for this new immersive way of playing games existed, and knew that it had the means and know-how to apply this technology to its next games console, the Wii.

The Wii marked a watershed moment in controller design, and its ultimate influence is still impossible to predict. Its main wireless controller, the Wii Remote, looked like a television remote control, but, like the N64 pad, it could be held in different ways: either like a traditional NES controller, with control via a D-pad and two face buttons; or held like a baton to offer pointer functionality – a feature that it gets from containing multiple accelerometers that measure all directions of motion and communicating with a sensor bar that plugs into the Wii console and sits above the television. Nintendo also included a secondary analogue controller for the console that plugged into the Remote. Nicknamed the Nunchuk, it featured an analogue stick, two trigger buttons and an accelerometer to registered gestural movement, but offered no pointer functionality. Mimicking what it had done previously with *Super Mario 64* and the N64 pad, Nintendo released a series of simple games to show off the motion sensor control scheme (*Wii Sports*), and applied them intelligently to games that required more traditional control methods, like *Super Mario Galaxy*, to demonstrate the versatility of its new machine.

In terms of time-honoured controllers, the Xbox 360 would succeed where the GameCube failed. Essentially a far better revision of the GameCube pad, proving that Nintendo actually came very close to getting it right once again, the 360 controller is a versatile, well-constructed and wonderfully comfortable controller, and is only equalled by Sony's lasting and similarly excellent DualShock.

Microsoft's announcement in 2009 that it was following Nintendo's lead through Project Natal – a control peripheral for the Xbox that negates the need for game controllers completely by using full-body 3D motion capture and face and voice-recognition technology – provides an ironic close to this brief overview of the evolution of game controllers. Although it's highly unlikely that the game controller will ever become entirely obsolete, the very thinking that we could be playing games without the need for control pads sooner than we might think is a pretty sobering thought. The game pad has proven to be an integral armament to any console's success: make a good one and your console has a far better chance of latching onto the public; make a bad one and it might just struggle in the marketplace. Moreover, considering that controllers have also helped to simplify, enhance and drive the videogame since its inception, can they really hope to advance without them? We guess only time will tell.

Joysticks courtesy of the Retro Computer Museum **www.retrocomputermuseum.co.uk** and Gavin Crossling.

Nintendo ENTERTAINMENT SYSTEM

When Masayuki Uemura came to the UK in early 2016 to celebrate the 30th Anniversary of the NES, we went along to get the inside story of Nintendo's iconic first cartridge-based console from the man who designed it

Masayuki Uemura, the NES's creator, gives his head a little shake and laughs. "I thought the NES taking off was impossible," he admits. "I think Mr Arakawa [first president of Nintendo Of America], never thought it would either. But in the entertainment industry, the unexpected happens. I feel so grateful people still play the NES. I can't believe I'm here!"

Professor Uemura is sitting opposite us in the conference room of the National Videogame Arcade in Nottingham, speaking through his affable interpreter Akinori 'Aki' Nakamura. He has been invited by the NVA to give a talk about the creation of the Famicom, renamed the Nintendo Entertainment System or NES for its Western release, and seems genuinely surprised with the love that the console still generates three decades after it made it to our shores. The event has been sold out for weeks because though in the UK the NES itself never sold in the huge numbers it did in America, we all know what came next. Its worldwide success – 62 million units shifted puts it in the top ten of bestselling consoles of all time – led to the SNES, N64 and the Wii and first introduced us to such perennial favourites as *The Legend Of Zelda*, *Final Fantasy* and, of course, the all-conquering *Super Mario Bros.*. The NES truly announced Nintendo's arrival in the console business.

We have been granted a meeting with the man behind Nintendo's first cartridge-based machine before his talk later in the evening. Uemura and Aki, both dressed in smart suits, bow politely and offer us their business cards. We nod awkwardly and in lieu of a calling card of our own, we present them with some locally brewed ale, which elicits slightly bemused but appreciative smiles. The mood suitably lightened, Uemura explains that just like Ralph Baer, the father of the home ▶

» Masayuki Uemura is the man who designed the Famicom/NES. He also created its 16-bit follow-up.

Nintendo
ENTERTAINMENT SYSTEM™
NES VERSION
POWER
RESET
1
2
SELECT
START
Nintendo®
B
A
START
Nintendo®
B
A

NES

SPOT THE DIFFERENCE

The many faces of Uemura's 8-bit console

FAMICOM

■ The distinctive colour scheme of the Famicom was taken from Nintendo President Yamauchi's scarf, though Uemura says they never quite got the shade right.

■ The controllers were wired into the console to save on production costs and could be clipped into place on either side of the machine.

■ The second controller had a built-in microphone which could be used as an input device, an idea clearly ahead of its time.

NES

■ The front-loading system was designed to make the machine look like a video recorder rather than a games console.

■ The restyled controllers adopted the colour scheme and more angular look of the NES and could now be plugged in and out.

■ Cartridges were shielded once inserted to discourage children with wandering fingers getting an electric shock.

TOP LOADER

■ The remodelled NES-101 came out in 1993 as a cheap 'entry level' console and allowed cartridges to be inserted from above, hence its nickname.

■ The rounded controllers clearly used the same template as the SNES and were considerably more comfortable in the hand.

■ Its smaller size and sleeker appearance is something of a nod to design of the original Famicom, though grey still prevails.

▶ console, his background was in television technology rather than games.

"I went to Sharp as an employee before Nintendo because I wanted to develop TV hardware," he says. "The fact I knew a lot about the hardware of a TV really helped when developing videogames. TV engineering is a good background for console development!"

Of course Nintendo itself was not yet involved in the emerging world of videogames when he joined in the early Seventies. The company had a long history of producing Hanafuda cards, something Uemura credits with instilling an obsession with the quality of Nintendo's output. These playing cards were used among the gambling fraternity and if your product was shoddy, you risked the ire of some potentially unsavoury types. "And you could play a lot of different games with them," he adds, "like a videogame console."

The famous 'Nintendo Seal Of Quality' may indeed have its origins in the ancient cards which the business had been built upon, though by the early Seventies the company was starting to experiment with electronic toys. One of the first projects Uemura was involved with was a lightgun game and Nintendo had some success in the public arena with its Laser Clay Shooting System and *Wild Gunman*, the latter game combining this lightgun technology with full motion videos of revolver-toting cowboys.

In the home market, 1974 saw Nintendo secure the rights to distribute the original games console, the Magnavox Odyssey, in Japan and so it was no surprise when it began releasing its own standalone TV games, which offered various flavours of *Pong* and sold in their millions in the latter half of the decade. Nintendo even produced dedicated machines such as *Breakout* clone *Block Breaker* and *Racing 112*, a generic driving game with its own steering wheel attached to the console but Uemura remembers the arrival of the all-conquering *Space Invaders* in 1978 made the company refocus on its arcade business. After a few moderate successes such as *Space Firebird* and *Space Fever* and a notable failure in *Radar Scope*, a coin-op shooter he worked on which left American arcade gamers distinctly unimpressed, Nintendo tried a different

» [NES] *Duck Hunt* made great use of the Zapper that came with the NES and it still plays well today.

» [NES] *Super Mario Bros.* was an important release for Nintendo and massively boosted sales of the system.

» Uemura has been travelling the world talking about his famous console. He remains staggered by its incredible success.

approach. Repurposing the 'fire' button as a 'jump' function, *Donkey Kong* was a huge hit in 1981 and had a profound effect not just on Nintendo's fortunes in the coin-op world, but in its console ambitions too.

"We licensed *Donkey Kong* to Coleco for their home console and of course we needed to evaluate it," smiles Uemura. "Coleco was a toy company, like Nintendo, so we had a long history of looking at what they were doing, not just with videogames. We looked at the specifications of their hardware and what they'd done with our licensed product. They had done a very good version of *Donkey Kong*, [quite] like the arcade game. That was a surprise! It made us feel confident…"

The commendable version of *Donkey Kong* that appeared on the ColecoVision not only became the 'killer app' for that console, it suggested to Nintendo the commercial viability of producing its own machine. Uemura, who at this stage was heading up the videogame division, certainly saw the potential of a cartridge-based system and, as early as 1981, began work on designs for what would become the Famicom, though not everyone shared his optimism.

"Back then at Nintendo, no one was imagining we'd make a console with interchangeable cartridges because Game & Watch was huge," he says. "Everyone thought that was the kind of product we'd make in the future. All the engineers I had were dispatched over to that division to help them out. I couldn't do the work I wanted to do because of that."

The huge success of Nintendo's handheld series, particularly at the beginning of the Eighties when titles like *Turtle Bridge* and *Snoopy Tennis* sold over a million units, may have hindered progress on his console plans in the short term, but it gave Uemura valuable thinking space. "Because of the lack of personnel [in my division], I couldn't work, which meant I could talk to a lot of people outside of the company to find out what was going on. Of course, I talked to Atari. I could get a lot of information about console games. This research time was very precious if you think about it. I could come up with a specific idea of what I wanted to do."

Uemura leans back in his chair and starts to explain the thought processes which would determine the internal workings of his console. He wanted a CPU small enough to allow a sound chip to be integrated onto the board, thus keeping costs down, and Nintendo had a relationship with chip manufacturer Ricoh, whose 6502 processor would fit the bill. "But it was a huge problem within the company because *Donkey Kong* was made with a Z80," sighs Uemura, "so using a 6502, we couldn't use the source code. It was like throwing away a precious resource! I decided to do it anyway as chief engineer. Others said I could only do that because I wasn't programming it myself! It did mean we had to do *Donkey Kong* from scratch…"

At least Uemura considered the needs of those poor programmers tasked with converting the game to a new processor by consulting colleague Shigeru Miyamoto, the man behind *Donkey Kong*, when determining the colour palette of the Famicom. "He knew which colours would be needed to recreate his games," says Uemura, "and he would tell me how many colours the console would need [to display]. I would ask and he would answer. That was how we worked!"

With some key hardware decisions made, Uemura and Nintendo also settled on cartridges as the storage medium for the console. "We had decided its sole function was to play videogames. If it's dedicated to that, we won't need to alter data, so we chose ROM over RAM but then in 1983, the USA had a big videogame shake-up with Atari. The media thought a games-only console was out of date. There was a buzz about home computers and Apple was getting big, too. I was afraid we wouldn't get media attention so I ▶

KONG STORY

If you've read David Sheff's excellent history of Nintendo, *Game Over*, you'll be aware that Nintendo initially approached Atari about distributing its console in the United States, and Uemura was one of the people tasked with showing Atari its work in progress. "They were really surprised we were making our own hardware [for a home console]," he recalls. "We had to show them the blueprint of the PCB to prove we had made it. They didn't believe it was our work! But the reason we could make such hardware is because we had made such amazing arcade hardware. That was very important. We weren't just looking at other consoles. We were thinking about *Donkey Kong*!" Indeed, it was a squabble over the rights to the home conversions of *Donkey Kong* which contributed to the deal breaking down." Does he think a partnership between Atari and Nintendo could have ever happened? "That's unimaginable now," laughs Uemura. "I wasn't in charge of making decisions like that so I can't really say." What he can say is that *Donkey Kong* remains his favourite game. Taste and technical nous, Professor Uemura…

» [NES] *Double Dragon* uses a limited number of tiles, but careful repetition provides a nice image.

» [NES] Complex multi-sprite images like this gorilla robot look nice, but are prone to flickering.

FRANCHISE STARTERS

The hit game series' that started on the NES

SUPER MARIO BROS.

■ Of course he had appeared in *Donkey Kong*, albeit with a different name and profession, and Mario and Luigi had already starred in a frenetic coin-op, but this is where the brothers really showed the world what they could do. *Super Mario World* may be top of many gamers' favourite games of all time lists but this is where it all began.

MEGA MAN

■ Rock hard – that's the man himself and the level of difficulty typical in this long-running series which debuted in 1987. The side-scrolling run-and-gun action of the original has you leaping platforms and blasting foes with a weapon handily attached to his arm. Defeating bosses rewards you with new weapons and so the carnage continues.

LEGEND OF ZELDA

■ After Mario, Link must surely be Nintendo's best-known hero and he too began his princess-saving career on the NES. The original game was a launch title for the Famicom Disk System in 1986 before appearing in cartridge form for the NES a year later and established the action adventure template for this superlative series.

CASTLEVANIA

■ Another game that first appeared on the Disk System, it arrived on cartridge for the NES in 1987 and introduced Simon Belmont, vampire hunter and whip-cracker extraordinaire, to the gaming world. The first game is a solid platformer but if you're new to the series, you may want to start with *Symphony Of The Night* on the PlayStation.

FINAL FANTASY

■ With the 15th instalment released in 2016, not to mention the host of spin-off titles, this may seem the most inappropriately named franchise in gaming history but when Hironobu Sakaguchi created the original for Square in 1987, it was reputedly his last gasp attempt to have a hit game. Its success means we've been playing them ever since.

METROID

■ The series with the most famous reveal, in both senses of the word, in videogame history, began on the Disk System in 1986. Combining exploration, combat, platforming, atmospheric aesthetics and a little brainwork too, this laid the foundations for some truly excellent episodes, particularly *Super Metroid* for the SNES.

▶ explained Family BASIC was on the way [to make the Famicom] like a home computer."

Nintendo did indeed produce a keyboard and data recorder package along with its own dialect of BASIC in 1984, allowing users to tinker with its own game creations within some fairly restrictive parameters and though it hardly turned the console into a fully-fledged home computer, it did show Nintendo was prepared to experiment with new ideas.

This is perhaps best illustrated when it came to designing the controllers for the console. We have brought along a NES pad, and we hand Uemura the grey rectangle with its distinctive D-pad and bright red buttons, asking if he was responsible for designing this iconic piece of hardware. "It was the most difficult choice I had to make," he says, cradling the controller like a beloved child. "I had designed arcade games [in the past] and they used joysticks. The engineers I was working with on the Famicom said, 'We have to use a joystick!' But there was one guy who had gone over to work on the Game & Watch [team]. He came back to our project and he brought the control unit created for the multi-screen *Donkey Kong* Game & Watch to our division. He took out the screen and connected the electronics to the Famicom and we played!"

Previous entries in the Game & Watch series had only needed buttons for left and right but *Donkey Kong* required upward movement so Mario, or Jumpman as he was known back then, could rescue his love interest. A joystick clearly wouldn't work with a folding dual-screen handheld, so the revolutionary D-pad was created and Uemura realised this would be ideal for his new console. "Naturally, we could have used a joystick but we were thinking of [the Famicom] as a toy and toys you put on the floor. Children might step on a joystick and it could hurt their feet… and break the controller! Also, when we played, *Donkey Kong* Game & Watch we found we were only looking at the top screen. With a TV screen, you only look at that, not the controller. You need that sense, just using your fingers."

Of course, it proved to be an excellent design decision and the ergonomically sound D-pad would become the industry standard for decades to come, even today, all of the current-generation consoles use it in one way or another. Not all the innovations of the Famicom controller were to be as influential, though, at least not in the short term. Uemura took the unusual step of including a microphone in the second controller, partly inspired by Japan's enduring love affair with karaoke. Was he really considering *Singstar*-style games at the start of the Eighties, we ask?

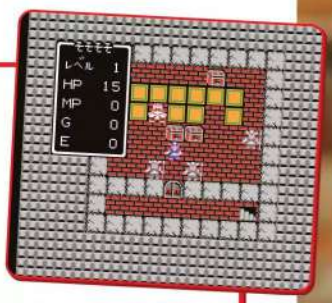
"I was thinking about it," he nods, with a twinkle in his eye. "I was also thinking about using the voice to play the role of the controller in games. I made sure the voice coming in from the microphone could be responded to by the CPU but only a few titles came out that made use of that function."

Clearly, it was an idea ahead of its time. With the Famicom project nearing completion and the core hardware taking shape nicely, there were still some cosmetic decisions to be made. It was decided that the cartridges themselves should be the same size as audio cassettes, allowing Japanese consumers to use pre-existing household furniture and containers to store their burgeoning game collection, and then there was the colour of the machine itself.

"We discussed the colour of the console a lot," remembers Uemura. "Should we make it look like a toy or more like serious hardware? In the end, President Yamauchi's favourite colour was red and so we used the same shade as his muffler."

If you're now worrying about Yamauchi's health – specifically his nose – we can assure you that we clarified exactly what Uemura meant by 'muffler' and were relieved to find he was referring to the President's scarf. Thus the aesthetically pleasing strawberries-and-cream colour scheme of the Famicom was agreed on… except the console wasn't called that yet. The machine was not given its name until shortly before its release and Uemura explains his very personal connection with the naming process with obvious pride.

"I always talked about work stuff with my wife. She was always willing to listen. I told her the name [of the console] had not been decided and it was taking a long time to come up with a good name. There were already 'personal computers' in Japan and we were discussing that [our console]



BATTLETOADS

■ Though Japanese and American developers dominated the NES release schedules, the console did at least have one notable British success story. Tim and Chris Stamper established their reputation for excellence on the ZX Spectrum as Ultimate but having changed its name to Rare, began a long and fruitful relationship with Nintendo.

DRAGON QUEST

■ A long-running series from Enix that started out on the NES, *Dragon Quest* (or *Dragon Warrior* as early titles were known in the West) helped popularise RPGs and establish mainstays of the genre, from turn-based combat and random encounters to controlling a party of adventurers as they battle to save the day.

» [NES] *Mike Tyson's Punch-Out!!* was superb, being a slick adaptation of Nintendo's popular arcade game.

was not 'personal', it was right there for everyone, so it had to be 'family', didn't it! My wife said, 'Okay, but it has to be Famicom. You have to make it shorter!' I took that idea straight to the company, that it should be 'Famicom'. President Yamauchi said, 'What the heck is that?!' He really didn't like it. I explained this wasn't just a 'personal computer', it was for all the family and that we Japanese tend to shorten everything and I thought it was a good name. He said, 'No, it's not a good idea to shorten [the words] at the beginning. If people want to start calling it that later, that's okay, but at the start, we needed to call it 'Family Computer.' So that's how the name came about!"

Nintendo's Family Computer was launched in Japan in 1983 and, according to Uemura, it sold 400,000 consoles that year, a respectable number though he is quick to point out that to be considered a 'hit' you needed to shift a million units. Moreover, defects in some of the graphic chips created by Ricoh and problems with the joypads soon became apparent. The Famicom had its controllers hard-wired to the console, which was a cheaper option than providing a joypad connector but proved costly in the long run. Nintendo hadn't anticipated passionate gamers mashing and yanking their controllers so aggressively in the heat of play and a damaged joypad meant the whole

» "My role was keeping down the cost," explains Uemura. "As long as it was cheap, the engineers could do whatever they wanted."

"I always talked about work stuff with my wife. She was always willing to listen"

Masayuki Uemura

NES
Nintendo ENTERTAINMENT SYSTEM
NES VERSION
SUPER MARIO BROS. 3
Nintendo
UNDER THE HOOD
Here's a look at the key components of the NES
EXPANSION PORT
■ This expansion port was included for the possibility of any extra add-on devices for the console, such as disk drives and modems. However, none of the projects using the expansion port ever saw the light of day, so it's a vestigial connector.
PPU
■ The Picture Processing Unit was custom-built for the NES, again by Ricoh. It was a very capable piece of graphics hardware in 1983, able to display 64 sprites and up to 25 colours on the screen simultaneously from a palette of 54.
CPU
■ The Ricoh 2A03, a modified version of the popular 6502 CPU, is an 8-bit processor running at 1.79MHz. It's a close relative of the CPUs used in the Atari 8-bit range, the Commodore 64, the Apple II and the BBC Micro.
LOCKOUT
■ The 10NES lockout chip enabled Nintendo to control who had the ability to release NES games, as well as enforcing regional lockouts between North American and European consoles. It's also a cause of the infamous 'blinking light' error.
NES-CPU-11
PAL-MTL
RAM
■ The biggest limitation of the NES is its limited RAM: 2KB reserved for general usage and 2KB for graphics. Cartridges often supplemented this with their own onboard RAM, according to their needs.
CARTRIDGE SLOT
■ Using a 72-pin connector rather than the 60-pin one for Famicom cartridges, the NES cartridge port was designed to replicate a video recorder's front-loading mechanism. However, the pins can easily become bent and dirty, leading to errors.
METAL GEAR™
ULTRA

console was unusable. "The main thing I remember from that time is the defective consoles being returned," sighs Uemura, who estimates a staggering 100,000 faulty Famicoms came back during that first year. "All these problems we had to overcome! The whole company had to get involved to resolve them. Yes, I felt pressure but it was exciting because everyone was helping us out."

The company rallied round its new venture, partly, suggests Uemura, due to increased competition in the handheld market previously dominated by Game & Watch, and by the end of 1983, its stocks of the Famicom had sold out. "I thought that was the end of it," he shrugs. "Personally, I was pessimistic but then in February 1984, distributors started asking me when we were making more! Kids were asking for it. There is a custom in Japan for grandparents to give money to children and this is what they wanted to spend it on!"

Though Uemura maintains the initial launch of the Famicom in his home nation was generally viewed as 'a failure', there was still talk of the company learning from its mistakes and revamping the console for the US market. Nintendo did, at least, have some indication that its videogames were valued across the Pacific. The Nintendo Vs. System was doing well in American arcades and Uemura recalls seeing the February 1985 edition of trade magazine *PlayMeter* showing Nintendo titles such as *Vs. Tennis* and *Vs. Pinball* dominating the charts. Nintendo were still producing games that people wanted to play but the negative image of home consoles which had followed the spectacular downfall of Atari and other key industry players was a significant barrier to overcome.

"We thought by changing the exterior of our console, we could make ourselves seem different," explains Uemura. "The front-loading system for the NES was designed to make it look like a video recorder [not a games console]. Also, the US is a dry country so we wanted to shield the cartridges… we didn't want children getting [an electric] shock!"

» [NES] Like several high-profile releases, *The Legend Of Zelda* started off life on the Famicom Disk System.

» "We didn't want the sound to be too annoying in the house, even if it was played repeatedly," says Uemura of the Famicom's audio.

There were other, more physical, concerns that influenced the redesign of the Famicom for the American market. "The hands of American children are bigger than Japanese children. We were worried they might find it hard to use the controller. Also, they didn't have D-pads but we thought this might make our console stand out from those that used joysticks."

After the problems with the controllers in Japan, Nintendo decided to make the NES controllers detachable. It also dispensed with the microphone, figuring that karaoke was not a big draw in the States, thus saving on cost, and they also recognised that American homes were generally larger than their Japanese counterparts so made the leads much longer. All sensible decisions though one addition for the US launch was a little more left-field. The console was bundled with its own Robotic Operating Buddy, or R.O.B., a toy robot that linked up with the NES. "We pushed that futuristic image," says Uemura. "This was not just a videogame. This was something new!"

The team also emphasised the primary 'entertainment' function of the machine by renaming it the Nintendo Entertainment System, a title which was only decided a month before the console's launch in the United States. Besides, the 'Family Computer' tagline had been used by rival manufacturer Mattel in its advertising for its Adam computer. Nintendo also included the NES Zapper in the package, after extensive market research had returned a not altogether unexpected finding. "Americans like guns", says Uemura, with a wry smile.

The NES launched in the United States in 1985 along with 17 games, predominantly titles taken from its Vs. arcade system. Porting tried-and-tested coin-op hits to home systems was a traditional way to boost console sales and indeed the kids of America were soon to be found playing *Vs. Tennis* et al on the many demo machines that had been set up in toy stores for free, rather than spending their precious quarters in the arcade. "It was still a risk," argues Uemura. "Just because these games were popular in the arcade, it didn't necessarily mean they would be in the home. The president of Toys R Us played the NES and said, 'This will sell!', which helped a lot. We were expecting sales of the NES to be 3 million. Then *Super Mario*

NES

MORE FROM UEMURA

COLOUR TV GAME SYSTEM

■ Nintendo took its first tentative steps as a console manufacturer in 1977 with the Color TV-Game 6. Featuring half a dozen versions of *Pong*, it was shortly followed by TV-Game 15, which served up more bat-and-ball games and added wired controllers, making it considerably more user-friendly. If you have a white version of the original unit, you have a real rarity as, apparently, only a few hundred were ever produced.

DISK SYSTEM

■ This Japanese-only peripheral allowed a disk drive to be attached to the Famicom console via the cartridge port and used bespoke floppy disks called 'Disk Cards' which could store 112K, which was a considerable size on its release in 1986. "Based on results, the disk system wasn't a good idea," acknowledges Uemura, "but from a developer's [point of] view, it was rewritable and it did reduce costs." A release in the West was mooted but never materialised.

ZAPPER (BELOW)

■ Originally resembling a revolver when released in Japan to tie-in with the cowboy-themed *Wild Gunman* game, this lightgun was remodelled for the North American market, adopting a futuristic blaster look. Initially produced in NES grey, a version came in fluorescent orange, presumably to distance itself even further from an actual firearm. Many pixelated birds succumbed to its firepower when *Duck Hunt* was bundled with the console.

SUPER FAMICOM

■ What Uemura did next. He was lead designer again on what would become one of the most beloved consoles of all time and home to some of the best games ever made. Uemura politely declined to answer any questions about his follow-up to the NES during our interview, though alluded to many intriguing tales concerning its creation. Perhaps when the SNES also reaches 30 we'll get to hear them.

"Kids were calling our HQ in Seattle if they were stuck in a game or asking about secrets"

Masayuki Uemura

» "I would like to have added larger sprites," says Uemura when asked if he'd have done anything different with his console. "Characters were only 8x8 pixels."

TO THE MAX

The games and chips that expanded the NES's capabilities

MEGA MAN 2

CHIP: **MMC1**

■ The first of Nintendo's custom memory management controller chips was used to switch between banks of program and character ROM, and it added support for important things like game saving and multi-directional scrolling. As a result, many games used it – literally hundreds of them, from both Nintendo and its third parties.

SUPER MARIO BROS. 3

CHIP: **MMC3**

■ The most popular of Nintendo's add-on chips was used in many NES games, and provided additional RAM, a pair of selectable 8KB program ROM banks, two 2KB character ROM banks and four 1KB character ROM banks. A scanline-based IRQ counter is also included to improve split-screen scrolling.

COBRA TRIANGLE

CHIP: **AOROM**

■ Chris Stamper's memory management controller is relatively simple, offering a 32KB ROM bankswitch and character RAM, but it has an odd quirk in that it uses one-screen mirroring, meaning that only one nametable is used for all four quadrants of the screen. As you might expect, it was used in games developed by Rare.

AKUMAJOU DENSETSU

CHIP: **VRC6**

■ As well as offering bank-switching for both program and character ROM and a CPU cycle-based IRQ counter, this advanced chip added three additional sound channels. In the US and Europe, *Castlevania III* used Nintendo's MMC5 chip instead, as the NES can't utilise extra sound channels like the Famicom.

GIMMICK!

CHIP: **SUNSOFT 5B**

■ Sunsoft's FME-7 controller allowed for program ROM to be switched in 8KB banks and character ROM in 1KB banks, and contained a CPU cycle-based IRQ. However, the upgraded Sunsoft 5B version used in *Gimmick!* also included a version of the Yamaha YM2149, adding extra sound channels that set the game apart from its peers.

» [NES] *Metroid* was one of several NES games that featured a Password Pak, after starting off life on the Disk System.

▶ *Bros.* came out about the same time as it entered America. The rest is history."

New hardware needs a 'killer app', a piece of software that captures the public imagination and makes consumers snap up a machine. *Super Mario Bros.* must rank as one of the best examples of this, becoming the biggest-selling title in videogaming history at the time and igniting America's love affair with all things Mario. There was a real buzz about this new console from the East and Uemura remembers tales of phones ringing off the hook at Nintendo Of America. "Kids were calling our HQ in Seattle if they were stuck in a game or asking about secrets. Our employees couldn't work effectively! We had letters from parents, too. I remember getting some that were really unhappy we hadn't included Stage 2 [the pie factory] in the NES version of *Donkey Kong*. We had to say sorry, it wasn't possible, but it made me realise parents were really evaluating the NES."

So despite the initial predictions from experts that Nintendo was foolhardy releasing a console after the so-called videogames crash of the mid-Eighties, the NES ended up dominating the American and Japanese markets for the rest of the decade, ably filling the gap left by Atari's fall from grace. Was timing a key factor in the colossal success of the console, we ask?

"You understand the meaning of the word 'Nintendo'?", Uemura replies. "Leave luck to heaven," we answer. He looks us right in the eyes and chuckles, "Well, there you are."

As our time with Uemura draws to an end, an orderly queue forms of National Videogame Arcade staff politely asking if he might autograph various bits of NES hardware. We dutifully join the line along with our photographer Matt, who clutches a boxed console in mint condition. Neither of us owned the machine back in the day but, as with so many Europeans, we have come to love it in retrospect. As Uemura gets busy with a magic marker, we ask him how important it was to him that his console was embraced not just in his native Japan but across the globe?

"From a management perspective, of course we want to sell to everybody in the world," he says, after a long pause, "but it's not about that from an engineer's perspective. It's about whether the hardware they produce will be loved and esteemed by everyone. That's what we struggle to do. Personally, I thought it was great hardware but I didn't think it would be accepted [in the way it was]. And remember, the people that made the games did not grow up playing videogames. Creating something in their minds and interacting with it on a TV screen was really exciting for them. That excitement was passed on from the developer to the player at home. Hardware can allow you to go beyond your imagination. Like [James] Watt invented the steam engine and it set other people's imagination free…"

It's a powerful point and Uemura's answer gives us the required confidence to ask him one final question. What role does he think videogames have played in fostering an understanding and collaboration between the nations of East and West? A gentle smile spreads across Uemura's face.

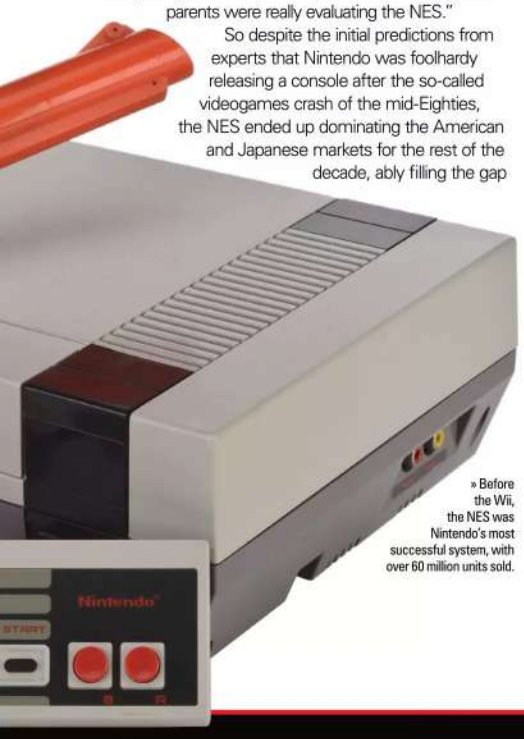
"Childhood is universal," he says. "We are different cultures but we share that universal sense of childhood. To children, it didn't matter if this software was coming from the East or the West. Kids loved Mario and parents loved [the NES] because their kids loved it. Children will be excited by similar things despite cultural diversity. I'm teaching at the university in Kyoto right now and [the word] 'jump' is used in Japan, taken straight from English. Kids, anywhere in the world, want to jump! We could integrate that into videogames. It's about play. The NES also had an important role in transmitting Japanese culture to the world and we received influences from the rest of the world. If America hadn't invented consoles, we wouldn't have the NES!"

The Nintendo Entertainment System as a symbol of peace and understanding may be pushing it slightly but it undoubtedly makes us look at the unassuming grey breeze block in a different light. As we shake hands with Uemura and Aki and say our goodbyes, fellow journalist Gemma asks its creator what the console symbolises to him?

"It's the device that changed my life," he laughs. "It made it go crazy! After all these years, I'm still talking about it, coming here, all over the world."

Over thirty years after its UK release and the NES is still bringing people together. ✱

Many thanks to the National Videogame Arcade, Uemura's translator, Aki, Gemma at juicygamereviews.com and Matt Taylor at bit.ly/1SVZX3t for the photography.



» Before the Wii, the NES was Nintendo's most successful system, with over 60 million units sold.

NEO·GEO AES

SNK'S JET BLACK JUGGERNAUT LANDED IN 1991 WITH HUGE CARTRIDGES, BIGGER CONTROLLERS, AND A STRATOSPHERIC PRICE TAG. JOIN US AS WE CHRONICLE THE HISTORY OF THE LONGEST-LIVED HOME CONSOLE EVER, AND THE FIRST TO BRING TRUE ARCADE PERFECTION INTO YOUR LIVING ROOM – IF YOU COULD AFFORD IT...

If you weren't around in 1991, you might know the Neo-Geo as something of a mythical beast of the gaming world. You may have heard rumours of games that cost hundreds, maybe even thousands of dollars. Perhaps you have seen its massive arcade-style joystick controllers, or stumbled into a Neo-Geo internet forum, only to have your head virtually chewed off by the regulars. Or, maybe you are one of the lucky ones who has actually played a Neo-Geo, and has joined the thousands of fans worldwide who regard the system as the crown jewel of a bygone era in gaming. These unfortunate souls are doomed to live with the sad knowledge that there will never be another system quite like the Neo-Geo ever again. What is so special about this system that it can inspire such fervour in its fans? Read on...

Before the days of Neo-Geo, its creator, SNK – also known as Shin Nihon Kikaku, or 'New Japan Company' – was a moderately successful Japanese arcade game developer responsible for such titles as *Vanguard*, *Alpha Mission* and *Ikari Warriors*. Thanks to its success in the late Eighties in the arcades and with various NES ports, SNK decided to experiment with new, unconventional ideas for expanding its presence in the arcade market. One such idea would lead to the birth of the Neo-Geo arcade hardware – MVS, or Multi Video System – and, subsequently, the Neo-Geo home console, the AES.

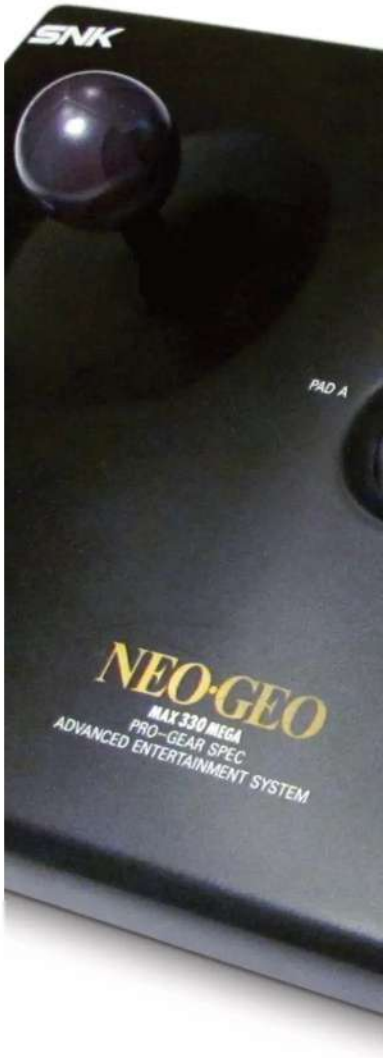
In the late Eighties, most new arcade games came on a single large circuit board and were sold complete with dedicated cabinets, at a significant cost. Arcade operators who wanted to have the latest games had to invest considerable money and floor space while shouldering a great deal of risk as to whether their investment would actually pay off. SNK sought to change that with its new machine. The Neo-Geo MVS was a single cabinet that could accommodate between one and six different titles in the same machine, depending on which model was purchased. Instead of new games being released as entire circuit boards containing the processing logic in addition to the game ROM, games would be sold as individual cartridges that contained only the game ROM data, leaving the logic integrated onto the MVS arcade board.

Luckily, SNK didn't skimp on the technical specs, and the MVS stood tall next to other arcade games of its era and proved to be extremely versatile as the years went on. The Neo-Geo featured a fast 16-bit Motorola 68000 CPU, as well as a companion 8-bit Z80 CPU, hence the '24-bit' moniker. Multichannel stereo sound with digital audio capabilities was also integrated into the machine.

Perhaps the most striking aspect of the MVS, however, was its advanced graphics capabilities. The hardware allowed for 4,096 simultaneous colours on screen, a fact that SNK later touted in advertisements when advocating its technical superiority to the Sega Mega Drive and Super Nintendo. The Neo-Geo was capable of displaying hundreds of massive, flicker-free sprites simultaneously, some of which could be larger than the entire screen. The cartridge format allowed the hardware to stream graphics from the game memory extremely rapidly, allowing for butter-smooth animation that would later prove a valuable asset for fighting games and pre-rendered 3D graphics.

That leads us to the home console counterpart to the MVS: the Neo-Geo AES. It is important to remember that in the late Eighties and into the early Nineties, many of the most commercially successful console games were ports of the most popular arcade games of the time. High-quality arcade ports were viewed as system sellers. In

» Some 'dog tag'-style US-released Neo-Geo cartridges, featuring the 'Bigger, Badder, Better' Neo-Geo logo with the game title against a black background.



“ Fans worldwide regard the Neo-Geo AES as the crown jewel of a bygone era in gaming ”

INSTANT EXPERT

■ **SNK actively supported** the Neo-Geo AES with new releases from 1991 through 2004, making it the longest-lived home videogame console in history.

■ ***Puzzled*, aka *Joy Joy Kid***, a launch title in Japan, was the smallest Neo-Geo AES game, weighing in at just 22 megabits. The largest AES title was *The King Of Fighters 2003*, released in 2004, at 716 megabits.

■ **Of the 148** Neo-Geo MVS titles officially released in the arcade, 117 had an AES home cartridge release in Japan. Of those, 93 had an official English-language counterpart.

■ **AES cartridges came** in three distinct types of packaging. The first-generation titles in Japan were released in easily damaged cardboard boxes. SNK quickly switched to a more durable, soft clamshell-type case, and eventually to a hard plastic snap case, beginning with the release of *Fatal Fury 3* in 1995 through the final release in 2004.

■ **All Neo-Geo** games use identical ROM chips in the cartridges, regardless of region or format (AES or MVS). As a result, the mode and language in which a Neo-Geo game plays is entirely dependent on the format and region of the system playing it.

■ **The Neo-Geo** AES ‘Gold System’ was launched on 1 July 1991 in the United States and came with the console, two arcade-style joysticks, and *Magician Lord* as a pack-in. MSRP was $649.99. The average MSRP for individual launch titles was $199.99.

■ **Four-player gameplay** was possible on the AES. Certain titles, such as *League Bowling*, had a small 1/8” linkup port in the top of the game cartridge, allowing gamers to sync with another console running the same game. Only three games ever made use of the feature.

■ **Early MVS (arcade)** Neo-Geo machines featured a memory card slot built in to the cabinet. That way, AES users with a memory card could continue games where they left off in the arcade.

■ **At some point** in the development cycle, each Neo-Geo title was assigned a unique three-digit ‘NGH’ number, found within the game code itself. Because there are holes in the otherwise sequential known list of NGH numbers, it is believed that there were many Neo-Geo games developed that never saw official release.

■ **‘AES’ is an** acronym for Advanced Entertainment System, another name for the Neo-Geo home console. ‘MVS’ refers to the Neo-Geo Multi Video System, the Neo-Geo’s arcade counterpart.

NEO-GEO AES

By bringing arcade games home, game developers of the era were usually faced with the daunting task of reprogramming the games from the ground up for the less powerful home hardware, often with very mixed results. While some ports were able to capture the spirit of the arcade original, they were very rarely perfect, and purists were always quick to recognise omissions and compromises.

That was simply not good enough for SNK, and the idea of arcade perfection formed the foundation of the AES home console. SNK decided that its arcade MVS games would also be made for its AES home system, and the games would be indistinguishable from their arcade counterparts. Therefore, the AES was manufactured to be technically identical to the arcade hardware. In fact, AES games actually used the exact same ROM chips as the arcade cartridges, although the two cartridges were not interchangeable due to different pin connectors. Thus, gamers were guaranteed the same experience at home as they had in the arcade.

» As with most collectables, counterfeit items can be a problem. These two AES cartridges look harmless enough but actually contain altered, fan-made case inserts in place of the SNK originals. Buy with caution!

Shortly following the launch of the arcade hardware and after test-marketing the AES as a rental unit, SNK decided to sell the AES system worldwide and market directly to consumers. To assist in marketing the console in the US, SNK of America created a special position known as 'Game Lord'. This was a face gamers could associate with the system who would also be responsible for getting the word out to potential buyers. Longtime game industry veteran Chad Okada was selected for the task. "SNK originally created this position because the US branch was in need of a person who knew all the aspects of videogames," he recalls. "To market the product well, they needed to know the competition and they needed someone who knew videogames as a whole, from a strategic marketing standpoint and from a gamer standpoint."

As with many things in life, perfection came at a price. The prices of the machine and its games are almost legendary in the history of gaming. Due to the advanced technology involved, the system's price was unprecedented at the time of release. The Neo-Geo Gold System, which included one game, launched in the US in 1991 at $649.99, with games averaging $199.99 each. The console itself had a sleek, elegant facade that was completely black, reinforcing its image as an 'elite' console. The game cartridges were larger than VCR tapes, had two edge connectors underneath, and were packed with expensive high-capacity ROM chips – and they also smelled of solder; a sure-fire way to tell a 'fresh' cartridge! To highlight its arcade roots, the system also included two large four-button arcade-style joysticks, each of which was almost as large as the system itself. At the time, the price of one AES cartridge was more than a brand new Sega Genesis console. More than one parent would lose sleep over the idea of keeping their kid happy with a fresh supply of games for this beastly unit.

Okada recognised the difficulties SNK faced in getting the console into gamers' hands, given the high price and retailers' reluctance to take a risk on the machine. "Early on, the strategy was to gain attention – not necessarily positive attention – and to market to a consumer that was older, richer, and could afford a premium-priced game system," he continues. "It was thought that we could only sell in places similar to a Sky Mall or Sharper Image. It was a difficult product to sell because of the price point."

As a result, SNK had to focus on the obvious technical superiority of the system while acknowledging the higher price tag. SNK had a very aggressive, adult-themed advertising campaign, and advertised in adult magazines in addition to the popular game magazines of the era. "It will always be known that SNK

» The mascot of the 'Bigger, Badder, Better' marketing campaign violently breaks off his leash to gnaw through the controller of your wimpy non-Neo game system in this classic ad.

» MVS to AES converters (two different models pictured) allow AES owners to play relatively cheap MVS games on their AES consoles in lieu of forking over hundreds of dollars for rare AES originals.

» *Magician Lord* was a launch pack-in, and as such is very common on the used market.

COMMUNITY THE BEST NEO-GEO AES RESOURCES ON THE WEB

neo-geo.com

This should be the first stop for anyone with even a fleeting interest in the Neo-Geo. Home to the infamous Neo-Geo forums and its community of rabid fans, the site also features price guides, master game lists, game reviews, cartridge photos, collection galleries, and the Neo Store, where high-end Neo goods are regularly stocked from sources worldwide.

neogeoforlife.com

Kazuya_UK's Neo-Geo reviews site has long been one of the finest Neo-Geo fan sites on the 'net. Here you can find in-depth reviews for nearly every Neo-Geo title, including ports to other consoles and even SNK-developed games for other platforms. The site is loaded with screenshots and is the best place to get the lowdown on whether a title is worth your time.

unibios.free.fr

The Universe BIOS, created by community legend Razoola, is a handy console modification that unlocks the full potential of the game cartridges in both AES and MVS units. Gamers can access debug modes, cheats, hidden game data, and even play the games based upon different hardware configurations. Think of it as a Game Genie for your Neo-Geo! Essential.

ngdevteam.com

NG Dev Team marketed and released *Last Hope*, a homebrew shooter, on the Neo-Geo in 2006. The cartridge was priced at $550 and was limited to 60 units produced. The fact that it sold out instantly is a testament to the dedication of Neo-Geo fans and the continued interest in new releases. Who knows what the future holds for homebrew development?

» An exclusive photo of the two rarest and most valuable AES titles ever: English *Kizuna Encounter* and *The Ultimate 11*. Unlike most English AES titles, these are believed to have only been distributed in Europe and fetch thousands of dollars each in the rare event a copy surfaces for sale.

tried to convince consumers that the Neo-Geo [AES] was exactly the same as the $4k machine in the arcades. And this was the truth," says Okada.

Fortunately for SNK, gamers quickly recognised the technical advances that the Neo represented. The AES launched alongside a host of software titles, and no popular genre was overlooked. There were action games (*Cyber-Lip*, *Magician Lord*, *The Super Spy*), sports games (*Top Player's Golf*, *Super Sidekicks*), shooters (*Ghost Pilots*, *Alpha Mission II*, *Last Resort*, *NAM-1975*), platformers (*Blue's Journey*), racers (*Thrash Rally*, *Riding Hero*), brawlers (*Burning Fight*, *Mutation Nation*), and even a pseudo-RPG known as *Crossed Swords* – obviously a difficult genre for the arcade. The vast majority of games all looked, sounded and played great, with many of the titles featuring high-quality speech that enhanced the home experience. Because many gamers had already played these titles in their local arcade, they salivated over the prospect of playing them at home.

"Gamers obviously went bonkers over it. They loved it. They all wanted it," recalls Okada about the launch. "When the Neo-Geo was released, it was the most respected powerhouse game system out. It was a system that trounced everything out at the time and made everything else look like toys."

> **"As gamers had played these titles in the arcade, they salivated over playing them at home"**

Nevertheless, retail sales for the machine continued to struggle. Then, suddenly, an event occurred that changed everything. 1991 saw the release of a little arcade title known as *Street Fighter II*, which, as everyone knows, shook the entire games industry to its core. Gamers packed arcades for their turn to go head to head against friends and foes alike in the genre-defining 2D brawler. Suddenly, the platformers and shooters of old weren't quite as interesting. A new type of game was in town.

Luckily for SNK, the Neo-Geo hardware happened to be perfect for the 2D fighting genre, thanks to its advanced graphics, high memory capacity and four-button controller layout, which was unusual in the era of JAMMA-based arcade boards, which traditionally used only three buttons. It turns out that SNK was developing a fighting title contemporaneously with Capcom's effort, which later became known as *Fatal Fury*. Despite having only three selectable characters and an admittedly inferior game engine, gamers jumped at the opportunity to play a decent alternative to *Street Fighter II*. *Fatal Fury* introduced many of SNK's most enduring and beloved characters, such as Terry Bogard and Geese Howard, as well as unique gameplay mechanics, including two-player co-operative gameplay and the 'line change' system. Plus, it looked and sounded great for its time. The fighting game frenzy was so intense that SNK quickly began producing additional new fighting franchises, such as *World Heroes* and *Art Of Fighting*. The games were so successful in the arcade that SNK couldn't release new sequels fast enough – barely nine months separated the release of *Fatal Fury 2* and *Fatal Fury Special* in 1993, for example.

In 1993, SNK released *Samurai Shodown*, a bloody weapons-based fighter set in feudal Japan. This incredible game proved that SNK was willing and able to challenge genre conventions and go toe to toe with Capcom in the fighting

Samurai Shodown V Special: Neo-Geo's final bow, complete with controversy

■ THE FINAL NEO-Geo AES title, *Samurai Shodown V Special* (known as *Samurai Spirits Zero Special* in Japan), was released worldwide on 9 July 2004 at a retail price of ¥39,800 ($359.99 in the US). Fans had clamoured for the release after seeing videos and screenshots revealing all-new violent fatalities for each of the beloved characters. When the AES cartridge finally arrived, fans were shocked to not only find bugs in the game's practice mode, but also that the fatalities had been removed. Fans could not understand the last-minute decision to censor the game in the age of *Grand Theft Auto* and were even more offended given the high price paid for the release. The uproar became so severe that SNK Playmore issued an unprecedented global recall of the Japanese and English AES cartridges, replacing a ROM chip inside the cartridges to allow for "toned-down" fatalities. Meanwhile, during the recall process, a talented Neo-Geo fan developed a method to unlock the full fatalities in the game code of the original release using a specialised system BIOS (the 'Universe BIOS'). Of course, this disappointed fans that had purchased the game at release, only to ship it right back to SNK Playmore for what was supposedly a superior version.

As a result of the recall, there are now both 'fixed' and 'unfixed' versions of this AES release – SNK placed a small Neo-Geo logo sticker on the cartridge shells to identify 'fixed' versions. Today, original 'unfixed' cartridges are very scarce and command a premium in the collectors' market, since that is the only version to contain the full fatalities hidden in the game code. Looking back, the episode serves to highlight a certain disconnect that SNK Playmore had with its loyal fans, who were certainly mature enough to handle a little blood and violence after forking over $350+ for a game on a 14-year-old console.

At least it appears that SNK Playmore tried to send the Neo-Geo off on the right note. The back of the game's English manual reads: "A FINAL FAREWELL: To all of our customers who have purchased NEOGEO ROM cartridges up till now. Thank you very much. We offer our most heartfelt gratitude for your loyal patronage over these 14 full years and hope for your continued support for our games on the many other platforms we will provide products for in the future. NEOGEO fans rule!"

game arena. The heated competition between the two companies would last through the decade and beyond as both companies tried to out-innovate each other with each new fighting game release. SNK's hugely successful *King Of Fighters* franchise, launched in 1994 and subsequently released in annual instalments through 2003, always went head to head with the hottest Capcom fighters of the day and remains a tournament favourite in Japan. Those who could afford the AES home console truly had access to cutting-edge titles, and this back-and-forth competition explains why almost half of all Neo-Geo AES games are 2D fighters.

Thanks largely to the fighting genre and its cheap, modular cartridge-based design, the Neo-Geo MVS was highly successful in establishing a foothold in arcades worldwide. Unfortunately, sales of the AES never really took off, and by the mid-Nineties the system had practically vanished from store shelves. "Even with the amount of marketing we had out for the Neo-Geo at the time, we couldn't get the product into big name chains," remembers Okada about the console's failure to break into the home market. Thus, AES fans were forced to source new releases from specialist game shops that could afford to advertise in game magazines, or directly from SNK via mail order. To make matters worse, the cost of new cartridges was slowly rising, and the media was beginning to give up on the console. SNK officially halted production of new Neo-Geo AES consoles in Japan in 1996, although game production continued.

Ironically, it is during this time that the Neo-Geo saw some of its most important releases. *Metal Slug*, developed by Nazca, was released in 1996 and gradually grew to be one of the Neo-Geo's most beloved and enduring franchises. The game took the *Contra* formula and added smooth, cartoony animation, awesome music with voice effects, and a variety of outrageous weapons. The game spawned five sequels on the Neo hardware alone, and the series has been ported to nearly every system, from the Sega Saturn to the Xbox 360. *Bust-A-Move*, also known as *Puzzle Bobble*, is one of the most well-known and oft-imitated puzzle games outside *Tetris*, and has become a staple of arcades worldwide – although, for some inexplicable reason, this title never saw an official AES release.

» The first AES title, *NAM-1975* (NGH-001), released to retail on 1 July 1991, next to the final AES title, *Samurai Shodown V Special* (NGH-270), released 9 July 2004.

The failure of the AES at retail did nothing to stop SNK from developing new Neo-Geo games, because the MVS continued to thrive. And, because AES and MVS cartridges were produced in the same factories in Japan, SNK was able to easily produce AES versions of the latest arcade releases at minimal cost to satisfy the small legion of loyal fans that remained. This explains the longevity of the AES system: despite the fact that the system failed at dethroning Sega or Nintendo, the success of the MVS system meant there was little risk to SNK in releasing limited quantities on the AES format.

As it turns out, quantities in some cases were extremely limited. It is estimated that, outside of Japanese releases and popular *King Of Fighters* and *Metal Slug* entries, many post-1995 titles were produced in quantities numbering in the low hundreds. For example, the AES version of *Metal Slug*, despite being one of the Neo's most successful arcade releases, is one of the most valuable videogames ever, commanding up to $3,000 for a complete, authentic English cartridge. The rarest games are believed to be the English releases of *Kizuna Encounter* and *The Ultimate 11*, with only a handful of copies surfacing over the years. The price of other rare AES cartridges began dramatically increasing and hasn't stopped since, making the AES one of the most collectable videogame systems

» SNK traditionally distributed flyers to arcade operators to promote the newest MVS releases. Toward the end, many were included as bonuses with new AES cartridge purchases.

» [Right] The final Japanese Neo-Geo AES release, *Samurai Spirits Zero Special*. [Far Right] *Metal Slug X* was an improved remix of *Metal Slug 2*.

» *Neo Turf Masters* is a fantastic golf game by Nazca, the same team responsible for *Metal Slug*. Like many AES games released in 1996, an authentic cartridge will cost you plenty.

» A row of English-version home cartridge releases, illustrating the 'meg count' displays and game logos directly on the spines.

If You're Still Playing SEGA, NEC, or Nintendo You're Nothing But a Weenie!
If You're Playing The Incredibly High Powered Neo-Geo System You're a Real Hot Dog!

» One of the most notorious magazine advertisements from the early days of the Neo-Geo, intended to give Nintendo, NEC and Sega gamers a serious inferiority complex.

of all time. Many titles actually sell for more than their original MSRP on the used market, and a select few even fetch thousands of dollars in the rare event that a copy pops up for sale. This has led to an influx of counterfeit AES titles that can be nearly indistinguishable from SNK originals, so buyers should take care to buy only from trusted sellers. On the bright side, many of the early release titles had relatively large print runs, and brand new stock is frequently sold at reasonable prices for those interested in getting into the system.

As time went on, the games themselves continued to improve and astonish. SNK illustrated a new mastery of the ageing hardware with each new release, such as *Blazing Star* in 1998, a tour-de-force among horizontal shooters, or the sublime *Last Blade 2* in 1999, which proved SNK's mastery of the weapons-based fighter. Meanwhile, the evolution of the internet attracted new gamers to the console who longed for the 2D glory days as 3D polygonal graphics took hold of the games industry. Fans began snapping up cartridges to add to their collection as popular Neo websites began registering users by the thousands. Shawn McCleskey has owned and operated **Neo-Geo.com**, the most popular of all Neo-devoted websites, since 2000.

"Anyone can own a port or download the ROM, but to own these games in their original form has enchanting appeal and is very rewarding," says McCleskey. "These games are art, from the packaging to the very game stored on the SNK boards, and to own Neo-Geo home carts is to own a piece of hardcore 2D gaming history."

So how did the Neo-Geo finally die? Even in 2004, after enduring the bankruptcy of SNK – later re-emerging as SNK Playmore – and spanning three different console generations, the hardware and games still proved popular in the arcades. The problem lay within the technology itself. When the Neo-Geo was designed, piracy issues were simply not a major concern among the developers, mostly because the necessary ROM chips were so expensive to purchase. As a result, both the AES and MVS have no built-in copy protection. Over time, the price of ROM chips declined drastically, allowing pirates to manufacture bootleg cartridges in bulk for a tidy profit. To thwart the problem, SNK attempted to integrate various types of copy protection into some of the later releases, with little success. Toward the end of the system's life, a flood of illegitimate bootleg cartridges almost instantly followed each new MVS cartridge release. The problem eventually proved too great for SNK Playmore to overcome, and it was forced to move on to developing games for more modern hardware. Because MVS development ceased, so too did official support of the Neo-Geo AES. Many have speculated that if it weren't for the rampant piracy that plagued the MVS hardware in the 21st Century, SNK Playmore would still be manufacturing Neo-Geo games today, thanks to the massive install base of the MVS hardware.

Today, over five years after its demise, the Neo-Geo AES still has a massive legion of fans and hardcore collectors worldwide. The games continue to resonate with those who appreciate unmatched 2D graphics and animation combined with frantic, arcade-style gameplay. There is a certain charisma inherent in most Neo-Geo games that sends one back to a time of fierce head-to-head arcade competition while reminding us what makes videogames fun in the first place. Chad Okada experienced the Neo's rabid fandom first-hand: "The fans were incredible. I have not, to this day, met any people as devoted to a videogame machine as the people who were fans of the Neo-Geo."

McCleskey, whose website continues to thrive, agrees: "The fact that the Neo-Geo [AES] home cartridge system is the longest-supported game system by a manufacturer in videogame history should speak loads about how dedicated the community has been. I have no doubt that there would be plenty of interest to buy, own and play any new official release from SNK Playmore if we were given the opportunity."

Special thanks to Michael DiCioccio (Tonk) and Anthony Bacon (www.anthonywbacon.com) for additional photos

NEO-GEO AES

PERFECT TEN GAMES

01

SAMURAI SHODOWN II

» **RELEASE:** 1994
» **PUBLISHER:** SNK
» **CREATOR:** IN-HOUSE
» **EXPECT TO PAY:** £20+

01 With its beautiful graphics, silky smooth animation and eclectic character roster, the second part of SNK's *Samurai Shodown* series is easily its best. The 202-meg cart featured new fighters, glorious backdrops and even slicker controls than the impressive original. A massive arcade success, *Samurai Shodown II* was a fantastic two-fingered salute to Capcom and proved that SNK's style and ambition knew no bounds. It certainly lacks the depth of later games in the series, but for sheer fun and accessibility *Samurai Shodown II* is without equal. A truly monumental fighter that still plays brilliantly today.

METAL SLUG

» **RELEASE:** 1996
» **PUBLISHER:** SNK
» **CREATOR:** NAZCA CORPORATION
» **EXPECT TO PAY:** £1,360+

02 Nazca's *Metal Slug* remains the definitive game in the series. Sure, we love *X* and *3*, but the original just does everything right. The action is fast and furious and the pacing is superb, while the level design and variation remains impressive. Bosses are extremely satisfying to defeat, the tunes perfectly suit the action, and the tongue-in-cheek humour immediately makes it stand apart from other run-and-guns. It's the glorious animation and the amazingly balanced gameplay, though, that proves to be *Metal Slug*'s trump card, not to mention that the titular tank is the cutest inanimate object we've ever seen.

02

THE LAST BLADE

» **RELEASE:** 1997
» **PUBLISHER:** SNK
» **CREATOR:** IN-HOUSE
» **EXPECT TO PAY:** £100+

03 Now here's a game that never seems to get enough love. Achingly beautiful – along with its sequel and *Garou*, it remains one of the Neo-Geo's best-looking games – *The Last Blade*'s deliberate pacing, outrageous depth and balanced characters have earned it an army of fans, and yet it's nowhere near as well-known as *Samurai Shodown*. Its alarmingly deep gameplay, over-the-top moves, ability to parry, and glorious aesthetics helped usher in a new era of Neo-Geo gaming and proved just how versatile the hardware was.

BLAZING STAR

» **RELEASE:** 1998
» **PUBLISHER:** SNK
» **CREATOR:** YUMEKOBO
» **EXPECT TO PAY:** £510+

04 Sure, you can laugh at its fractured Engrish, but play Yumekobo's stunning shooter and you'll be gobsmacked. With its mesmerising pre-rendered sprites, insane bosses, and outrageous power-ups, the 346-meg *Blazing Star* always justifies its high price tag, and along with *Pulstar*, it remains the Neo-Geo's finest blaster. *Blazing Star* assaults the player with excited speech, intense alien waves, finely tuned gameplay mechanics and humongous mayors. The end result is an amazing rollercoaster of a ride that you'll never want to end.

KING OF FIGHTERS '98: THE SLUGFEST

» **RELEASE:** 1998
» **PUBLISHER:** SNK
» **CREATOR:** IN-HOUSE
» **EXPECT TO PAY:** £95+

05 It would have been all too easy to select several *King Of Fighters* for our top ten, but this is easily our favourite. Everything about *King Of Fighters '98* just screams, 'Look at me! I'm so much better than everything else!' The gameplay is instantly accessible but offers a satisfying layer of depth and its cartoony visuals still look sensational, while its many and varied backgrounds are some of the most detailed around. Add in its massive roster of excellent characters and it's another essential AES purchase.

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With half the system's games being fighters, a fair few of them have made our Top 10. There are still some very classy – not to mention expensive – alternatives, though...

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WINDJAMMERS

» **RELEASE:** 1994
» **PUBLISHER:** SNK
» **CREATOR:** DATA EAST
» **EXPECT TO PAY:** £95+

06 *Windjammers* proves that you don't need superlative visuals or complex fighting mechanics to become an essential AES release. Essentially nothing more than a tarted-up version of *Pong* – you fling a frisbee and use angles to slip it past your opponent – *Windjammers* is one of the finest multiplayer games on the system and combines slick controls and fast gameplay to create one of the most enjoyable games around. Like the best arcade games, it's easy to get into but includes enough nuances and techniques to ensure that you'll constantly return to it.

GAROU: MARK OF THE WOLVES

» **RELEASE:** 1999
» **PUBLISHER:** SNK
» **CREATOR:** IN-HOUSE
» **EXPECT TO PAY:** £340+

07 There can't be many Retro Gamer readers who aren't aware of this fantastic title, as we harp on about it every chance we get. Honestly, though, *Mark Of The Wolves* is basically the finest brawler on the AES and possibly the finest 2D fighter of all time. In addition to totally revitalising the *Fatal Fury* series, it boasts 11 new fighters, some of the best visuals to ever appear on the AES, and nigh-on perfect gameplay mechanics. It's expensive, but you could argue that you'd never need to buy another fighter.

NEO TURF MASTERS

» **RELEASE:** 1996
» **PUBLISHER:** SNK
» **CREATOR:** NAZCA CORPORATION
» **EXPECT TO PAY:** £1,000+

08 Extremely tough to get hold of – it currently has an 'extra extra rare' rating on Neo-Geo.com – this offering is still worth tracking down, providing you can afford it. While *Neo Turf Masters* (*Big Tournament Golf* in Japan) doesn't really bring anything innovative to the table, Nazca's superb offering plays an excellent version of the sport thanks to its slick presentation, tight controls and speedy pace. There are two modes to choose from, a variety of golfers, and some beautiful courses to play on. An excellent, surprisingly deep, game of golf.

09

FATAL FURY SPECIAL

» **RELEASE:** 1993
» **PUBLISHER:** SNK
» **CREATOR:** IN-HOUSE
» **EXPECT TO PAY:** £20+

09 Like *Garou* and *The King Of Fighters '98*, *Fatal Fury Special* is available on Live Arcade for just 800 Points. Purists may want to go for the original, and with a nice low price point it's definitely worth picking up. Essentially an updated version of *Fatal Fury 2*, improvements include a new combo system, speedier overall gameplay and a far larger roster of playable characters. Indeed, you now have access to all the bosses from *FF2*, as well as the return of several non-player characters from the original *Fatal Fury*, including Geese Howard and Duck King. It looks wonderful as well, with massive sprites and glorious backdrops.

PULSTAR

» **RELEASE:** 1995
» **PUBLISHER:** SNK
» **CREATOR:** AICOM
» **EXPECT TO PAY:** £340+

10 One day we'll confirm that *Pulstar* was created by former Irem employees, but for the time being you'll just have to be content to play one of the Neo-Geo's toughest shooters. Unflinchingly difficult – our hats are doffed to anyone who has 1CCed it – it requires a hell of a lot of skill to make any sort of progress but is so fantastically designed that you'll want to keep persevering regardless, especially once you've managed to get to grips with its excellent charge system. Despite its difficulty, *Pulstar* remains a sensational addition to any Neo-Geo collection and is highly recommended to all hardcore shmup fans.

10

*** Cheapest prices according to Neo-Geo.com's price guide**

NEO-GEO AES

NEO·GEO AES and the rest...

Undeniably expensive, the Neo-Geo is host to some of the finest arcade conversions around, as the following two pages prove. How many have you played?

01 02

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01 METAL SLUG
02 ART OF FIGHTING
03 2020 SUPER BASEBALL
04 VIEWPOINT
05 BLAZING STAR
06 NEO TURF MASTERS
07 SAMURAI SHODOWN II
08 FATAL FURY
09 NAM-1975
10 THE KING OF FIGHTERS '98: THE SLUGFEST
11 CROSSED SWORDS
12 ANDRO DUNOS
13 MAGICIAN LORD
14 DOUBLE DRAGON
15 METAL SLUG 3
16 EIGHT MAN
17 THE KING OF MONSTERS
18 PULSTAR
19 THE LAST BLADE
20 THRASH RALLY
21 ALPHA MISSION II
22 LAST RESORT
23 THE SUPER SPY
24 RIDING HERO
25 MUTATION NATION
26 SENGOKU
27 MAGICAL DROP II
28 SOCCER BRAWL
29 BASEBALL STARS 2
30 THE KING OF FIGHTERS '94
31 WORLD HEROES 2
32 WINDJAMMERS
33 GAROU: MARK OF THE WOLVES
34 NINJA MASTERS
35 STAKES WINNER 2
36 ART OF FIGHTING 3: THE PATH OF THE WARRIOR
37 BURNING FIGHT
38 KARNOV'S REVENGE
39 PUZZLE BOBBLE 2
40 REAL BOUT FATAL FURY SPECIAL
41 AERO FIGHTERS 2
42 SAMURAI SHODOWN IV: AMAKUSA'S REVENGE
43 CYBER-LIP
44 METAL SLUG X
45 SUPER SIDE KICKS
46 THE KING OF FIGHTERS '96
47 THE LAST BLADE 2
48 PREHISTORIC ISLE 2
49 TOP HUNTER: RODDY & CATHY
50 BREAKER'S REVENGE
51 NINJA COMMANDO
52 BLUE'S JOURNEY
53 PANIC BOMBER
54 GHOST PILOTS
55 FOOTBALL FRENZY
56 AERO FIGHTERS 3

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AMIGA

» Commodore used some pretty brave marketing to sell the CD32. Sadly, it didn't really work.

CD32

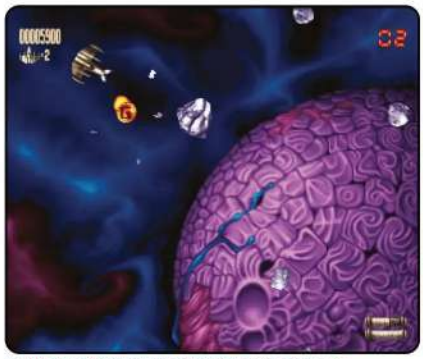
From its unveiling in July 1993 to its official demise in April 1994 when Commodore went bust, the Amiga CD32 was nothing if not short-lived. David Crookes breaks down the console's rollercoaster ten months

» [CD32] Released a couple of years after *Mario Kart*, the Amiga port *Bump 'N' Burn* added new theme tunes and bits of commentary for the CD32.

Plans for the CD32 had been devised in the Summer of 1992 when the design of the AGA chipset had been finished and Commodore was looking to create a more successful system than the CDTV. Rumours of this CD-based Amiga began doing the rounds at the start of the following year but only those working within or closely with Commodore really knew what was going on.

The rest caught up on 16 July 1993 when the Amiga CD32 was unveiled to a huge crowd of journalists at the Science Museum in London. "We got the presenter Chris Evans there and everything was done right," recalls David Pleasance who was Commodore's joint managing director. It was the first time in David's memory that Commodore had actually sat down and properly planned a release. "Before that, they just launched products whenever they wanted," he admits.

The launch started 30 minutes late but it didn't seem to matter. Hundreds of available seats had backsides firmly planted on them and other guests were standing and craning their necks to see what was going on. As proceedings got under way, a quote boomed over the speaker system. It was from an interview with Tom Kalinske, the president of Sega Of America, that David had read in a PC magazine weeks earlier. "Tom had been saying a 32-bit CD-based games console could not be done at the right price and that if anyone could do it, it would be Sega," he tells us. "When I read that, I was whooping around the office and I knew we had to use it."



» [CD32] *Super Stardust* was a big hit on the system and has been revisited by its developer many times since.

Then, as the shutters next to a video wall began to draw back, Commodore's console finally saw the light of day. "We had done it," David tells us of the moment of glory. And yet his joy was tinged with frustration. "Out of the blue I had been told that the CD32 was going to be in the shops in August because Commodore wanted the sales for Christmas," he says. "I fought and fought and fought against it but they wouldn't listen."

The launch was provisionally set for 20 August but, records show, it didn't hit that date. Nevertheless, the plan was to have 30,000 CD32s ready and waiting in the shops and to retail the console for £299 – which, incidentally, was the same price as the CDTV. For that, buyers would get a machine that was an Amiga 1200 at heart: a 32-bit console with a 14MHz 68020 processor, a palette of 16.8 million colours and a double-speed CD drive with audio support.

David's concern, however, was that there wouldn't be any games ready in time for the launch. "I ▶

» Commodore hired Chris Evans in order to inject some life into the CD32's unveiling event.

"You can't write off a product due to a lack of software and, at that time, we had to keep going"

David Pleasance

» [CD32] *The Chaos Engine* was one of those rare CD32 conversions that actually made use of the system's additional fire buttons.

▶ had very strong relationships with nearly all of the software publishers and we had sent development machines to a good number of them," he explains of what was basically an open circuit board nailed to a piece of wood. "They'd all signed NDAs which they adhered to, amazingly, but it was clear that we wouldn't have a large number of games available so soon."

In David's mind, the machine needed to launch the following Spring. "I had it in my head that we would launch a fabulous product and have a strong line-up of games from the start, killing everything else in sight," he says. Yet Commodore really needed the money.

Commodore showed off the machine to the American games industry at the World Of Commodore Show in Pasadena, California, between 10 and 13 September. Days later – between 16 and 20 September – the public got their first glimpse of the CD32 system at Live '93, a new consumer electronics show held for the first time at London's Olympia.

Commodore's stand was mobbed, which gave the company great confidence and, with the console in the shops on 17 September, it was certainly time to hit the ground running. The company promoted the CD32 as both the world's first 32-bit CD console and the first standalone CD console to be sold in Europe. It was well received by the press, though David reckons the press was generally "very anti-Commodore".

Developers seemed to like it too. While the console used bitplane graphics which was a pain for devs who created their games on PCs, the addition of the Akiko chip was felt a decent enough solution. It allowed byte-per-pixel to bitplane conversions on the hardware and Bullfrog's Peter Molyneux was a fan. "[It] converts the PC screen into the plane mode on an Amiga – this makes a huge difference because you've got the best of both worlds," he said at the time.

Trouble is, it took a while for players to see the benefits because there were so few games available for the CD32 in the weeks after it was released. "Not having them ready had an affect on sales," bemoans David. "But you can't write off a product because of a lack of software and, at that time, we had to keep going." Commodore vowed to focus its attention away from its PC-compatible computers. It put its weight behind the Amiga range instead.

Such focus was important since Commodore was in deep water financially. During 1993, it managed to

ESSENTIAL EXCLUSIVES

Rozz Goodley and Antony Crowther alias the Byte Engineers, would like to welcome you to the world of Liberation. Happy hunting. .
Game playing : - Mission 1
Hello, and welcome to a Navi Com.
Just select your destination from my list and I shall endeavour to navigate you there.
You are standing on Foster Avenue, Kappa Zone.
Error 957. NetLink lost. Directions Unavailable.
Goonbanbin DataNet apologise for any inconvenience.

LIBERATION: CAPTIVE II

■ With so few games launched prior to Christmas 1993, the RPG *Liberation: Captive II* was a real treat. Released on 15 December and originally a CD32 exclusive, it packed 50MB of graphics, six hours of digitised speech and more than 4,000 levels on the disc. It could be played with a mouse plugged into the CD32's spare nine-pin joypad port.

DEFENDER OF THE CROWN II

■ Although this medieval-based strategy game was promoted as a sequel, it followed much the same story as the original, albeit with some additional gameplay, enhanced graphics and better sword fighting. The lack of a save feature was a bugbear – but that was actually a general CD32 problem.

THE MISADVENTURES OF FLINK

■ Developed by Psygnosis (which debuted on the CD32 with Microcosm), *Flink* also surfaced on the Mega Drive and Mega-CD but never on the Amiga computers. As a platformer it falters, but its blend of puzzles, fighting, adventure and shooting gelled well with the nicely animated characters.

lose an eye-watering $357 million so it needed the CD32 to succeed. Gamers, on the other hand, were simply pleased to see developers backing the system. Millennium released *Diggers*, and it announced *James Pond 2 – Robocod* would have £10,000 worth of animation and a brand-new soundtrack. And while Thalion claimed it was going to release *Ambermoon* on the console (but didn't), 21st Century said *Pinball Fantasies* would gain some aesthetic enhancements.

Come the middle of the month and Team17 had straight Amiga ports of *Project X*, *Alien Breed*, *F17 Challenge* and *Qwak* available at £14.99, and Gremlin launched an enhanced version of *Zool*. Claims by Commodore that 40 games would be available by Christmas fell short of the mark but the console was at least getting the backing of retailers and developers.

To boost sales, Commodore also launched a television advert. It was a typical sci-fi effort starring scientists which placed an emphasis on "incredible graphics" and "colours, so many colours".

Slowly but surely more games arrived, making good use of the 600MB of space available on the CDs. It was clear that £29.99 was to be the price point of most games – good news given titles on the Mega-CD cost between £39.99 and £49.99.

Commodore tried to lower the prices further, understanding that cheaper games would lead to greater console sales. It told publishers that the royalties it would pay for each game would be halved if the price of their titles fell below £15. But although fewer games went to that price, there was a trend for companies to create compilations.

Gremlin spruced up the graphics of its three Lotus games and put them all on a single CD for a penny under £30 while Team17 would later become celebrated for its double packs. Commodore also produced console bundles. It had originally offered only Oscar and *Digger* but it added *Wing Commander* and the poor beat-'em-up *Dangerous Streets* which lent the pack its name.

As if to prove the CD32 could do more than just play videogames, 109 consoles were used by the London Transport Museum in Covent Garden, London to display interactive information, video and animation when the venue reopened on 16 December. They were linked to touchscreen displays and the machines also powered an underground train simulator. The CD32 machine had come a long way.

Now the focus was entirely on Christmas. UK retailer Dixons was supplied with 30,000 CD32 consoles on 10 December and Commodore was confident of selling between 70 and 75,000 machines by the year's end. It succeeded in outselling the Sega Mega-CD but it was by no means a time for peace to all men.

Indeed, it was this month that David received a phone call from an outdoor advertising company. "He told me he had three large poster sites in central London which someone had paid a 50 per cent deposit on but didn't want," David tells us. "He said I could have them for half price."

One site was slap bang in front of Sega's headquarters on Cromwell Road, London – a hugely visible position. "We had the poster say, 'to be this good will take Sega ages'," he chuckles. "We could say this because it was true."

With Christmas out of the way, January began well. Rumours circulated that Commodore was in talks ▶

THE BEST GUIDE TO CD32 SOFTWARE IN THE WORLD
AMIGA CD32
Syndicate
Bullfrog crimefest!
THE WORLD'S BEST CD AMIGA MAGAZINE
AMIGA CD-FORMAT
AMIGA CD32
20 fact packed pages on Commodore's kicking new console

» [CD32] Team17 supported the CD32 with ports of its games, like *Worms*, but that was far from a reason to get excited for the system.

SIMON THE SORCEROR

■ Many CD32 games were enhanced ports from the A500 but some worked very well. Adventure game *Simon The Sorceror* added digitised speech, with *Red Dwarf*'s Chris Barrie voicing Simon and lifting the humour further. Incidentally, *Beneath A Steel Sky* also had spoken dialogue, while managing to slash the 15 floppies needed on the A500 to just one CD.

DIGGERS

■ This *Lemmings*-esque strategy game was not only an exclusive for the CD32 for a while, it was also one of the first games to appear on the system. The idea was to figure a way of digging for the most gems but – its use of 256 colours within the intro aside – the game sadly didn't make the most of the console's power.

» [CD32] *Ultimate Body Blows* was the definitive version of Team17's popular fighting game and offered an impressive amount of content.

HARDWARE WARS

AMIGA CD32

CPU: 32-bit 68EC020, 14Mhz
MEMORY: 2MB RAM
COLOURS: 16.7 million
RESOLUTION: 320x256 – 1,280x512
CD DRIVE SPEED: Double
SOUND: Four-channel 8-bit
FMV: Optional, MPEG-1 cartridge
PRICE: £299

CD-I

CPU: 16-bit 68010, 16Mhz
MEMORY: 1MB RAM
COLOURS: 16.7 million
RESOLUTION: 384x280 – 768x560
CD DRIVE SPEED: Single
SOUND: Eight-channel 16-bit
FMV: Optional, MPEG-1 cartridge
PRICE: £499

3DO

CPU: 32-bit RISC ARM60, 12.5Mhz
MEMORY: 2MB RAM, 1MB VRAM
COLOURS: 16.7 million
RESOLUTION: 384x288 – 768x576 (PAL)
CD DRIVE SPEED: Double
SOUND: 16-bit stereo
FMV: Optional, MPEG-1
PRICE: £399

MEGA-CD

CPU: 16-bit 68000, 12.5Mhz
MEMORY: 768K RAM, 128K RAM dedicated to CD-ROM
COLOURS: 512
RESOLUTION: 256x224 - 320x224
CD DRIVE SPEED: Single
SOUND: Eight-channel 16-bit
FMV: Built-in capability
PRICE: £270

▶ with LucasArts about a potential deal to bring *Rebel Assault* and *Day Of The Tentacle* to the CD32 and while this didn't happen, January did at least see the launch of the much-heralded Full Motion Video add-on cartridge, albeit in limited quantities.

Priced at £199, it wasn't cheap but it was based on the MPEG-1 standard and it let users enjoy Video CDs at 25 to 30 frames per second. It plugged into the expansion bay at the back of the console and it hoped to be a desirable alternative to VHS. David helped promote it at the time but today he doesn't even remember taking orders for it. "I can't remember anything about the FMV cartridge," he admits. Suffice to say, it flopped.

Still, it proved something of a hectic month for the CD32, with Commodore deciding it was time to unveil the console in the US at long last. It had originally pencilled this in for November but Lew Eggebrecht, vice president of engineering, showed it off at the Consumer Electronics Show in Las Vegas at the start of '94 and challenged rivals to "show us a better games player." The CD32 was set to retail at $399 and come bundled with *Sleepwalker* and *Pinball Fantasies*. The FMV cartridge would cost $250.

Commodore needed the American launch to go well, and so it pencilled it in for the end of February or early March. Although limited numbers were on sale in Canada, Commodore believed cracking the US would turn around its ailing fortunes. In the meantime, it was able to look at sales elsewhere and feel confident: in mid-February, Gallup, which compiled the sales chart, reported CD32 games were accounting for 38.6 percent of all CD software sales in the UK.

That put it ahead of CD-ROM (31.3 per cent) and the Mega-CD (27.6 per cent) and it more than slapped down Philips CD-i which could only manage a paltry 1.8 percent. Sure, it was easier finding rocking horse

» Commodore wasn't adverse to slinging mud at its rivals. It famously took a billboard ad out in front of Sega's UK office.

» [CD32] *Banshee* is one of the best shooters on the CD32, but it's a lazy port that doesn't really add anything new.

poop than it was an FMV cartridge (only a few hundred were shipped out this month) but the figures gave Commodore some hope regardless, even if the CD market wasn't that huge to begin with.

"By this point, the publishers had managed to get some games out and the sales rose," confirms David. "We were also seeing more and more games being written that took advantage of the CD32 format rather than just ports of existing Amiga games. I always knew when we launched the CD32 that many of the games we knew about were three or months away," David adds. "It was good to see them come through."

Come mid-March and the CD32 had a 44 per cent share of the CD market. Psygnosis' Microcosm had also sold out, with 16,000 sales in the first few weeks of release. To capitalise on the interest, Paragon Publishing released *Amiga CD32 Gamer* magazine. "We'd visited Commodore and obtained permission to make the magazine and the cover disc," says editor Stuart Wynne. "The demos were very helpful to readers."

It was a gamble for Paragon given the number of next-gen machines that were on the horizon but it wasn't alone: *Amiga CD!* and *Amiga CD32* magazines were also published in 1994. "The Amiga had a fabulous games library so we thought there could still be loyal developers to provide a killer app," Stuart remembers. He worked with Commodore, chasing demos which took a lot of time and persuasion. "The first issue had lots of hope but not a lot materialised subsequently that could set the machine apart or which made proper use of it," he laments.

A big blow came when Commodore International announced it had lost $8.2 million and the New York stock exchange promptly halted trading of Commodore stock. Worse, Commodore had been ordered to pay $10 million in royalties to Cad Track which held a patent on a technique that used XOR to make the cursor flash. Until it was settled, a federal judge said the company couldn't import the machines into the US which was a major problem given the CD32s earmarked for the US were being made in a factory in the Philippines. "I always said having them made there was crazy

» [CD32] Ocean's *Sleepwalker* was made for Comic Relief and it involved trying to save a sleepwalking boy from harm.

– it was a five week journey by sea and it made no business sense," says David, who recounts his time at Commodore in the book *Commodore: The Inside Story*. The consoles sat idle.

Still, at least the CD32 was in the running for Best Hardware at the European Computer Trade Show, up against the Atari Jaguar, 3DO, Sega's Mega-CD and a PC card called Reelmagic. Unfortunately, on 12 April, the Jaguar walked away with the prize and, as if to compound the pain, *Rebel Assault* – the game which never did arrive on the CD32 – was named the best CD game of the show.

By now, though, Commodore International's financial woes really had caught up. Amid boardroom squabbles and debt, it had failed to renegotiate its outstanding loans and it filed for bankruptcy on 29 April. This was all the more frustrating given the CD32 was accounting for 55.6 per cent of the CD software market at this time, buoyed by games such as *The Chaos Engine* and *Elite 2*. Indeed *The Chaos Engine* had only just been bundled with Psygnosis' Microcosm and added to *Wing Commander, Dangerous Streets, Diggers* and *Oscar in The Spectacular Voyage* pack that retailed for £249. But that was of little consequence.

Commodore's assets were liquidated and a buyer was sought. Potential suitors included Amstrad, Sony, Acer, Samsung, Goldstar, Hewlett-Packard and Philips but the CD32 was effectively discontinued. Commodore UK continued, selling whatever it had in its warehouse. Commodore's dream of creating a successful console, however, was over.

WHAT HAPPENED NEXT?

LIFE AFTER DEATH

■ Developers didn't suddenly stop making games in April 1994. In fact, *Alien Breed 3D* and *Worms* were released in 1995, along with the likes of *Brutal: Paws of Fury, Pinball Illusions, Syndicate* and *Theme Park*. More were launched in 1996 and even *Amiga CD32 Gamer* magazine continued, running for 21 issues up to February 1996.

ARCADE ANTICS

■ In 1995, the CD32 formed the basis of an arcade machine called CUBO CD32. Created by CD Express, an expansion card was plugged into the back of the console, connecting with a JAMMA board. New games were then made in-house, including *Candy Puzzle, Harem Challenge, Laserquiz* and the card game *Magic Premium*.

TOP CONVERSION

■ In September 1994, Paravision released an expansion called the SX-1 which was hooked up to the back of the CD32 and allowed a keyboard and disk drive to be connected. This effectively turned the console into an A1200 – so long as you had Workbench and a mouse, anyway. It breathed new life into the ailing machine.

DRIVING FORWARD

■ Allegedly, in the Nineties the CD32 was used within driving test terminals in Canada and they were even given away in banks to people opening an account. VanCity Saving Credit Union in Canada created a home-based banking system using the CD32 as its host. Users could pay bills and transfer funds using the controller.

UNFULFILLED DREAMS

■ David Pleasance discussed a buyout of Commodore. He now tells us he had "big plans" for the CD32. "I wanted to offer it to all of the hi-fi manufacturers and get it into their stacking systems," he says. "I believed we would achieve great volume and realise a dream of getting the machine into peoples' living rooms."

WITH NINTENDO'S LEGENDARY CONSOLE RECENTLY SOARING PAST ITS 30TH ANNIVERSARY, WE FIND OUT WHAT MADE IT SO SPECIAL

SUPER NINTENDO ENTERTAINMENT SYSTEM

Many gaming systems have been branded iconic over the years, but that term seems almost inadequate to describe the Super Nintendo, a console which is perhaps the finest ever produced by industry veteran Nintendo. The Kyoto-based company's sophomore home system had the hardest of acts to follow; the NES – or Famicom as it was known in its native Japan – was a commercial success in North America and Japan, essentially granting its maker a monopoly on home console-based interactive entertainment. Post-NES, Nintendo's job was made harder by the fact that rival firms had upped their game and entered the market with powerful challengers, such as the NEC PC Engine and Sega Mega Drive, which launched in 1987 and 1988 respectively. By the time Nintendo was ready to officially announce its 16-bit console, the aging NES was losing audience share to these spritely new systems, and something drastic was required to put Nintendo back on top. Looking back now – a quarter of a century later – it's impossible to deny that the SNES did just that, and much more besides. By the time Nintendo moved onto the N64, its 16-bit system was home not only to some of the finest games of the generation, but of all time – and they've endured in the years that have elapsed since then. ▶

DIFFERENT VERSIONS

The SNES had a number of forms...

SUPER FAMICOM

■ Sleek, playful and undeniably classy, the Super Famicom boasted a design which was far removed from the plain and boxy Famicom. The controllers were revolutionary and the four-colour logo has become a cult icon – Nintendo even resurrected the colours for its recent New Nintendo 3DS handheld. On the base of the console an expansion port exists which allows it to connect to the Japan-only Satellaview add-on. The PAL version (shown here) looks identical, but sports SNES branding.

SNES JR/ SNES MINI

■ Launched in 1997 – a time when most players had moved onto more powerful hardware – the SNES Jr was marketed as a cheap, entry-level proposition for younger players. Smaller in size and cheaper to produce, this revised system lacks RGB output as standard but can be modified to obtain it. The power LED and eject button – both hallmarks of the original design – are also absent, as is the expansion port on the bottom.

SNES (NORTH AMERICA)

■ For some unfathomable reason, Nintendo used a totally different case design for the SNES in North America. Designed by Nintendo Of America's Lance Barr, the boxy and unattractive system dropped the four-colour buttons in favour of a purple and pink palette. The cartridges were also changed, with the US versions adopting the same squared-off design to match the console itself. Thankfully, the European model reverted to the Japanese design, but many misguided American fans swear their version looks best.

» The front of the SNES is elegant. It sports power, eject and reset buttons in front of the cartridge slot.

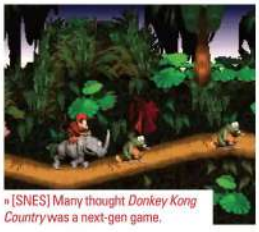
Back in the early Nineties when the news came that a successor to the all-conquering NES was in the works, it wasn't just gamers the world over who were rubbing their hands with glee – developers who had made a living on Nintendo's 8-bit system were also keen to see if it could live up to the hype. "It was exciting to see the specs," recalls Chris Sutherland, a former Rare developer who is now working on *Yooka-Laylee* at Playtonic Games. "Previously I'd developed on Game Boy and many others at Rare had worked on NES, so this was a chance to develop games that had far fewer technical limitations." Fellow Rare alumnus Brendan Gunn agrees. "It felt like a natural progression from the NES that I was already very familiar with. This made it very easy to get up to speed. The hardware features were far more advanced, but in ways that seemed like a very natural progression." Other developers simply couldn't believe what Nintendo was telling them. "I was given a preliminary outline of what the machine could do," remembers Nick Jones, the former Shiny Entertainment staffer responsible for the SNES versions of *Earthworm Jim* and *Alien 3*. "It seemed impossibly optimistic and with no hardware or full manual it was hard to really make out what the machine could do. It was like somebody took every programming restriction I'd ever had and just moved the limits an order of magnitude ahead."

For Brendan and Chris, the SNES represented the next step in the evolution of the games console. "The level of restrictions on the NES and Game Boy had been raised, which is why SNES games tended to have larger characters," says Chris. "Back then, characters were typically built from a number of 8x8 sprites, and if you had more than a certain number of sprites in a row, you'd see parts of your sprite disappear." Compared to rival hardware of the time the SNES' gaming-focused internals allowed for some amazing experiences. "The SNES felt much easier to work with, but that may be because it was so much like an enhanced NES," says Brendan. "It helped that the hardware was designed very specifically with things like scrolling and parallaxing in mind, where the Amiga hardware was designed to be a more general purpose computer." Mike Dailly – who was employed at DMA Design when the SNES launched and worked on *Unirally* – feels that the system was head and shoulders above its competition. "It was better than the Amiga and PC by miles, and the hardware was better than the Mega Drive," he says. "There were just so many toys to play with. I preferred the SNES over everything else. I thought it was an amazingly cool machine."

> **"IT FELT LIKE A NATURAL PROGRESSION FROM THE NES THAT I WAS ALREADY VERY FAMILIAR WITH. THIS MADE IT VERY EASY TO GET UP TO SPEED"**
> Brendan Gunn

While Rare's staff was arguably in a privileged position, having gained valuable experience of Nintendo hardware via its wide selection of games on the NES and Game Boy, other developers had to muck in and learn the hard way. "I went from the C64 which had a 6502 processor straight to the SNES which had a 65816 processor," explains Nick. "They are almost identical except that the 65816 is 16-bit and the 6502 is 8-bit, so you'd think the transition would have been easy, but it wasn't. I was stuck in this mindset that I needed to optimise every byte. The hardware was a lot more complex, which took a little getting ▶

» [SNES] *Pilotwings* highlights what the SNES could achieve using Mode 7.

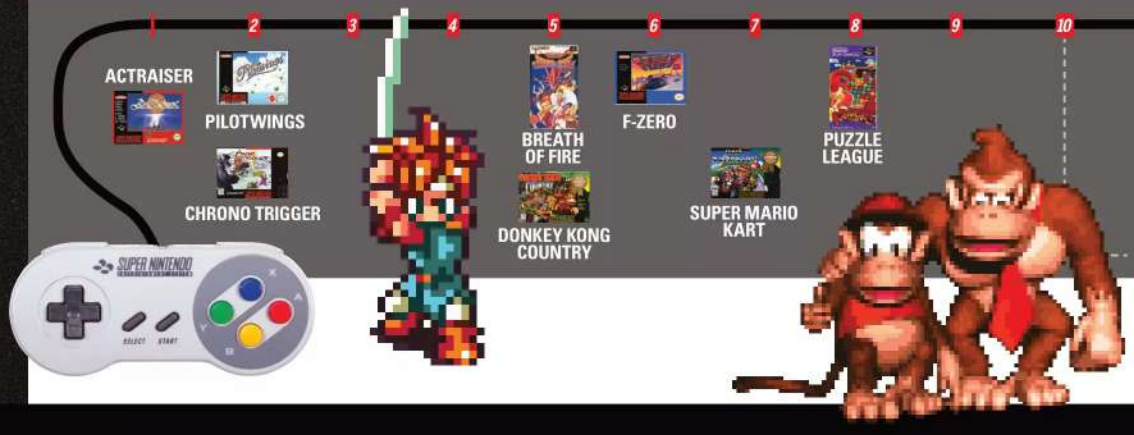


» [SNES] Many thought *Donkey Kong Country* was a next-gen game.

» [SNES] *Super Mario Kart* remains our favourite game in the series.

FRANCHISE STARTERS

Just some of the brilliant franchises that began on SNES



STAR POWER

Ten legendary developers that made the SNES sing

Nintendo

■ Unsurprisingly, Nintendo itself was the company which did the most to define the SNES, releasing some of the console's best games.

CAPCOM

■ The arcade conversion of *Street Fighter II* remains one of the most important SNES releases, and gave Nintendo a massive advantage over rival Sega.

SQUARESOFT

■ The undisputed master of the RPG, Square produced some of its finest work on the SNES, but sadly many of its titles remained exclusive to Japan.

KONAMI

■ Responsible for some amazing arcade and action games for the SNES, including *Super Castlevania IV*, *Axelay*, *Parodius* and *Turtles In Time*.

Acclaim

■ Titles like *NBA Jam* and the *Mortal Kombat* series made Acclaim a household name in the Nineties, and it scored many commercial hits on the SNES.

"MODE 7 MADE THE HEADLINES, BUT WAS OF LIMITED USE FOR THE KIND OF GAMES WE WANTED TO MAKE. THE OTHER FEATURES WERE FAR MORE EXCITING TO ME"

Brendan Gunn

» The SNES pad was surprisingly comfortable and a big improvement over the NES pad.

used to. The manual was written in English by what I assumed to be a Nintendo engineer who wasn't entirely fluent in English, so I had to be flexible when reading how something worked. I still have my manuals and I prize them."

The SNES heralded a new era of trickery thanks to the inclusion of Mode 7, a graphical mode which allowed it to smoothly scale and rotate a single background layer. It was put to good use in titles like *F-Zero*, *Pilotwings*, *Super Mario Kart*, *Super Castlevania IV* and *ActRaiser*. While it was an impressive visual trick, its effectiveness was restricted outside of certain genres. "Mode 7 made all the headlines, but was of limited use for the kind of games we wanted to make," explains Brendan. "The other features were far more exciting to me. Multi-layered parallaxing and colour blending made for much richer backdrops, while bigger sprites gave us far greater capabilities for big, colourful characters," Chris agrees. "We actually stayed clear of Mode 7 for the most part because the ability to scale and rotate was so new and shiny, it felt like it was obligatory for games to use this mode. It also had limitations in its use that made us veer towards using the other modes with some tricks to appear to add more 'layers' of movement than the hardware supported."

The SNES was cutting-edge, but the market into which it was thrust was very different to the one the NES had dominated so effortlessly. Sega was no longer content with second place and, thanks to savvy marketing and an earlier release, it managed to secure a chunk of the North American and European markets with its Mega Drive system. What occurred next has become the stuff of legend, forever ingrained in the consciousness of the gamers who lived through it: the industry's first *real* console war. "It was interesting because this was a time when there was a difference between each platform," says Jonathan Town, a former Nintendo community manager and retro-gaming aficionado. "These days it doesn't matter too much whether you have a PC, PS4 or Xbox One as the majority of titles are the same and the differences are negligible. The SNES and Mega Drive had a charm to them and even the same game would be different depending on which console you had. Instead of arguments over frame-rates, we had *Sonic* vs *Mario*, *Final Fight* vs *Streets Of Rage*, *Star Fox* vs *Silpheed*; each console had a clear personality."

Naturally, Nintendo's console was compared directly to Sega's hardware, and their respective strengths and weaknesses were highlighted in the magazines of the period. "They were both very comparable machines," says Nick Jones. "The Mega Drive had a faster processor, slightly bigger screen resolution and a synth chip for audio. The SNES had complex graphics modes, a higher range of colours, the video signal was a lot cleaner and it played audio samples for sound – which was a disadvantage and an advantage at the same time. "While the SNES boasted superior capabilities, much was made of the console's slower CPU – a trade-off Nintendo made to ensure it cost less to manufacture. The weaker chip is often blamed for the lack of fast-paced shooters on the platform, but Chris Sutherland insists that it was rarely an issue from his perspective. "The speed issue wasn't something that we encountered too much with the *Donkey*

■ Virgin was a prolific publisher on both the Mega Drive and SNES, releasing titles like *Earthworm Jim*, *The Lion King* and *RoboCop Versus The Terminator*.

■ Before merging with Squaresoft, Enix was its rival and made the popular *Dragon Quest* franchise.

■ Once the home of programming Pickford siblings, this studio produced *Plok*, *Equinox*, *Ken Griffey Jr. Baseball* and more for the SNES.

■ Sunsoft's prolific work during the 16-bit era may not have yielded many solid gold classics but the company certainly pumped out quite a few SNES releases.

■ The creator of one of the SNES' most important titles – *Donkey Kong Country* – UK-based Rare mastered the hardware in a way few others could manage.

» [SNES] The *Earthworm Jim* franchise received two games on SNES.

» [SNES] One of the most enjoyable scrolling fighters you can play on SNES.

Kong Country series – perhaps because we were brought up on resource-starved consoles such as NES and Game Boy so we were always trying to be keep things optimised as we developed. Back then systems like that with specialised sprite video hardware that targeted video games could often outshine what was done on a standard PC."

Nick feels that the sluggish CPU was definitely a shortcoming, but like Chris, he was able to overcome this with some clever programming. "It was a little bit of a handicap for sure," he says. "The processor wasn't as powerful and it didn't have as many registers either. One advantage I had was that I came from a C64 background. The processor on that chip was even more restrictive and all games on that machine had to run at 50MHz so I learnt a lot of tricks to achieve that magical frame-rate. Even when I went to Shiny and we worked on *Earthworm Jim*, I didn't tell the Mega Drive programmers my 65816 tricks for over a year so that it evened the playing field. One of the other restrictions was the way that sprites were drawn onto the screen. The SNES was much more limited so you had to draw a lot more sprites to get the same graphic on a screen, which meant more processing power just to set the graphics up. I was able to disguise most of the difference in processor speed. If you play *Earthworm Jim* on the SNES and Mega Drive, the most obvious way to spot the speed difference is when starting a level. Because that was when the game was decompressing the level and graphics – a task limited by processing power. The levels would take about three times longer to decompress on the SNES." Nintendo augmented the power of the console with additional chips which were packed into the cartridges, the most famous of which is the Super FX chip, used in *Star Fox*.

These days, it's often the case that developers require time to fully harness the power of a console, and as a result, the software you see at launch is but a taster of what's to come – by the end of a console's life ▶

» Handily, the AV lead for the SNES's output can also be used on a GameCube if you own one.

CONSOLE WARS

Scraps that defined an era

MARIO VS SONIC

■ While the *Sonic* games arguably lacked the deep playability of *Super Mario*, the blue hedgehog was marketed perfectly and stole a lot of the Italian plumber's thunder in the early-Nineties. The simultaneous worldwide launch of *Sonic 2* was an event which eclipsed even Nintendo's amazing efforts.

SUPER FX VS SVP

■ As the SNES and Mega Drive grew older and the industry's focus on 3D gaming became ever more apparent, Nintendo decided to enlist the help of UK developer Argonaut to create a chip to bolster the console's polygon-pushing prowess. Sega countered with the Sega Virtua Processor (SVP for short).

SVP Image © Socram8888

FINAL FIGHT VS STREETS OF RAGE

■ When Nintendo secured the port of *Final Fight* it was a massive blow to Mega Drive owners. In typical Sega fashion, the company simply created its own clone: *Streets Of Rage*. The title scored a victory over it SNES counterpart by offering a two-player mode.

STREET FIGHTER II

■ When Nintendo managed to get the first home conversion of the legendary brawler it turned Nintendo's console into the must-have system of the era. A Mega Drive release would follow in due course, but the damage was done – the SNES had scored a massive victory over its rival.

SNES VS PLAYSTATION

■ The recently unearthed prototype has resurrected interest in this system, which would have been a SNES and Sony CD-ROM drive combined. Nintendo ditched Sony the day after the console was announced. Sony wore revenge and the SNES-less PlayStation launched in 1994, conquering the industry.

MORTAL KOMBAT

■ Family-friendly Nintendo was always going to have an issue with Midway's gore-filled fighter. Ironically, the SNES got the best port in technical terms but at Nintendo's behest the gore was expunged. While the Mega Drive version also suffered censorship, a code could unlock the gore – making it the version everyone wanted.

PERIPHERALS

The SNES had some cool add-ons...

SUPER GAME BOY

■ This nifty device not only allowed you to play Game Boy games on your TV, but expanded a fair few games in interesting ways, too. The most obvious was that you could add borders to games you played or change the traditional four shades of green to different colours. Some titles featured enhanced sound, while certain games let you use a second SNES controller to play two-player games.

SUPER EVERDRIVE

■ If you're a fan of homebrew or backing up your own games then the Super EverDrive is an essential piece of kit. It plugs into your SNES and allows you to add ROMs to it via a SD card. There are various versions available and they included Game Genie cheat codes, with optional USB ports being available for homebrew devs. It's certainly not cheap, but it's very good at what it does.

SUPER SCOPE

■ The Zapper was popular on the NES, so Nintendo tried to replicate its success with the Super Scope. While it has some decent games in the form of *Operation Thunderbolt, Tin Star, Yoshi's Safari* and *T2: The Arcade Game*, it's not as essential as the Zapper. Its biggest problem was the peripheral's rather unwieldy size; while it set the Super Scope apart, it ensured it wasn't as practical to use.

SUPER NES MOUSE

■ Originally packaged with *Mario Paint*, the SNES Mouse proved to be quite a well-supported peripheral. Although a large number of games were only released in Japan, over 30 titles were released in the West, including *Cannon Fodder, Eye Of The Beholder, Pieces* and *Powermonger*. The only thing that really lets it down is the relatively short lead that connects it to your SNES.

▶ span the games are leagues ahead of earlier releases. However, the SNES is unique in that the game it launched with is still considered by many to be its finest single piece of software. All of the developers we interviewed list *Super Mario World* as one of their favourite SNES games, with Mike Dailly even rating it as his favourite game of all time. This platformer is legendary even by today's standards, and is merely the cherry on the top of a library which surely ranks as one of the best the industry has ever seen. "I definitely have to choose *Super Mario World* as my go-to game," says Jonathan Town. "However aside from that obvious choice, I really love *Axelay*. It's a lovely-looking shoot-'em-up with a gorgeous soundtrack and balanced difficulty. What really makes it for me though is *Axelay* was a console exclusive, made especially to play to the strengths of the SNES, from the incredible effect on the vertical stages to subtle use of sprite scaling on the boss battles." Some of the console's best games are, refreshingly, a little off the beaten track, such as Human's *The Firemen*. "It's a story-led action game that sort of reminds me of the movie, *Die Hard*," explains collector Stuart Brett, who is planning to publish a book about Super Famicom art soon. "A fire breaks

out at a Christmas party in a corporate skyscraper and we play as Pete Grey and Daniel McClean as they tackle the fire, floor-by-floor, rescuing employees and taking out security robots along the way. It has some great dialogue and character design. It's a lot of fun."

What makes the SNES so remarkable is that it was strong in so many genres, and literally had something to offer for gamers of all tastes. However, one genre in which it excelled was the RPG. "It was the undisputed king of RPGs," continues Stuart. "From the *Earthbound, Secret Of Mana* and *Chrono Trigger*, to the *Final Fantasy* series, *Illusion Of Gaia* and *Tales Of Phantasia* – they were just incredible games that you could sink hours into. However, that's just the tip of the iceberg. The Japanese market had hundreds more, some of which have been translated and patched by fans. I'm still discovering new RPGs for ▶

THE COLLECTOR

Stuart Brett on collecting Super Famicom games

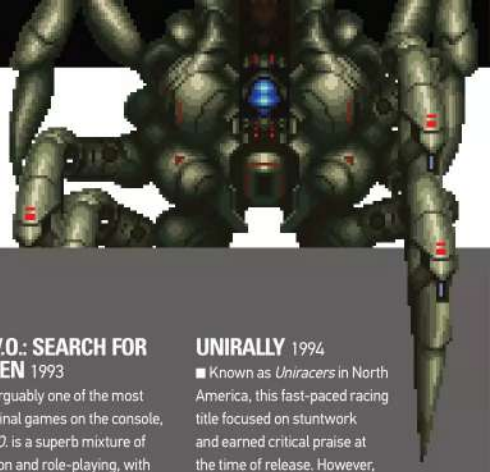
Roughly how many SNES and Super Famicom games do you have in your collection?
I have just under 400 now. Around a quarter of my games are stored away. I sold off quite a few games last year, mostly games I never play. They were taking over my games room and filling my wardrobe and I was running out space to store my clothes so I sold some off!

What single item has cost you the most?
Spider-Man: Lethal Foes. It was around £280. That was a recent purchase. All the other games I have which are worth thousands (according to ebay sellers) were never that price when I bought them. I have always tried to not overspend and I enjoy hunting down a bargain.

What item do you treasure most from this collection?
I enjoy playing my Super Famicom Box. It's a special version of the console that Nintendo developed for use in Japanese hotels. They contain some unique versions of some classic games, including *Star Fox* and *Mario Kart*.

Can you tell us a little about your book, *Super Famicom: The Box Art Collection*?
I wanted to design a book that celebrates the art and effort that went into game design in the Nineties. There will be over 250 games inside and editing the book with me is Steve Jarratt, ex-editor of *Edge*. The book will be published by Bitmap books and pre-ordering will be announced later this year.

SUPER NINTEN STEM



SEQUEL THIS Ten SNES exclusives that deserved sequels

AXELAY 1992

■ Konami's superlative shooter was not only the perfect advertisement for the console's amazing graphical capabilities, it also played like a dream – no small feat when you consider how unsuited the SNES was to this kind of game. Amazing music, gripping gameplay and timelessly attractive visuals make for a true classic – a sequel was hinted in the end credits, but never came.

ARCANA 1992

■ Unkind observers might brand this little more than a shameless clone of Sega's *Shining In The Darkness*, but it's actually a much better game that doesn't get near enough credit. Turn-based battles and dungeon-crawling make for a stern challenge, while the gorgeous visuals and a painfully beautiful soundtrack ensure it looks and sounds as good as it plays.

SOUL BLAZER 1992

■ While many fans lump this RPG in with fellow Quintet titles *Illusion Of Gaia* and *Terranigma* as a trilogy, the titles are actually self-contained offerings. Out of the three, this is perhaps the most underrated and most deserving of a sequel. It mixes exploration with real-time action, and the notion of rebuilding a world through your actions lends the game additional appeal.

PLOK 1993

■ The work of Ste and John Pickford, *Plok* is a typically zany platforming epic which apparently gained the appreciation of Shigeru Miyamoto himself. Colourful, action-packed and delightfully playable, *Plok* has since been resurrected by the Pickford brothers in a webcomic, and the 16-bit original remains one of the most unique platformers of the period.

E.V.O.: SEARCH FOR EDEN 1993

■ Arguably one of the most original games on the console, *E.V.O.* is a superb mixture of action and role-playing, with the player assuming control of various beasts from Earth's past. Success in combat allows you to level-up and evolve your creature which means they can better deal with environmental changes. It's bonkers, but compelling all the same.

UNIRALLY 1994

■ Known as *Uniracers* in North America, this fast-paced racing title focused on stuntwork and earned critical praise at the time of release. However, due to the similarity between the main character and the unicycle in Pixar's animated short *Red's Dream*, Nintendo was forced to bow to legal pressure and not manufacture any more copies once the initial 300,000 run had sold out.

» We greatly prefer the artwork found on Japanese games. The boxes feel a little sturdier too.

> **"THE SNES' WEAKNESS WAS LACK OF ARCADE CONVERSIONS OF ANY WORTH, WHILE THE MEGA DRIVE WAS DROWNING IN THEM"**
> Jonathan Town

the console. The latest being *Verne World*, which is set in a futuristic theme park." While there were notable shooters – like the aforementioned *Axelay* – this is practically the only genre that Nintendo's console struggled with, thanks to the slow CPU. "The SNES' weakness was lack of arcade conversions of any worth, while the Mega Drive was drowning in them," admits Jonathan. "Shooters in particular – there are a few great ones, but only a handful."

Like the Mega Drive, the SNES was supposed to get a hardware expansion which leveraged the incredible capacity of CD-ROM discs, and while Nintendo partnered with electronics giant Sony to work on the unit, it ever made it to market. The recent discovery of a SNES PlayStation prototype has put this ill-fated venture back in the headlines and jogged the memories of developers of the time. "During the winter 1992 CES show, I was lucky enough to attend a private demonstration of a CD-based Sony prototype," says Brendan. "The demonstration took place in fancy hotel room well away from the show, and it was to a small group of Nintendo representatives along with a small contingent of top Rare people – and me! The demo consisted of a video streaming from the CD. I liked the concept technically, but we were not impressed with the video quality." Mike Dailly recalls that DMA was actually commissioned to produce software for the device similar to that which Brendan describes. "DMA was originally approached by Nintendo because we had a video playback engine for it. We demoed a clip of *Star Wars* playing from a 4MB cart, and they were very interested in the tech for the CD-ROM system. But it all went quiet and we started doing *Unirally* instead."

The popularity of the SNES has ensured that it remains in high demand with collectors. Starting your own collection isn't expensive, and recent developments have lowered the barrier to entry on the more common releases. "A lot of the games have dropped in price fairly dramatically due to availability on emulators or via the Virtual Console on Wii and Wii U," says Jonathan. "US and UK RPGs still command ridiculous prices, but there are plenty of great games to be had for less than £20. The real problem is finding them in good condition – the cardboard packaging sadly doesn't fare very well if not looked after." While finding some common games at a decent price isn't going to be hard in today's market – providing you're happy with just a cartridge – the more desirable titles are rising in value. "Videogame

SKYBLAZER 1994

■ A rare case of Sony Imagesoft making a decent game, *Skyblazer* is an attractive action platformer which made good use of the console's Mode 7 capabilities. Coming towards the end of the console's lifespan *Skyblazer* was perhaps unfairly ignored, and certainly deserved a 3D sequel which would have made better use of the game's flying sections.

SECRET OF EVERMORE 1995

■ Following the success of *Secret Of Mana* Square decided to found a North American studio and produce an RPG aimed squarely at western audiences. While *Secret Of Evermore* wasn't up to the standard of its Japanese siblings, it was unique compared to a JRPG. It's a shame Square didn't produce more titles of this type.

MAJYUUOU: KING OF DEMONS 1995

■ Konami's shooter was not only the perfect advertisement for the console's graphical capabilities, it also played like a dream – no small feat when you consider how unsuited the SNES was to this kind of game. Amazing music, gripping gameplay and attractive visuals make for a true classic – a sequel was hinted in the end credits, but never came.

BAHAMUT LAGOON 1996

■ One of the last great RPGs of the SNES era, this Japan-only release was tipped for a western localisation but it never happened. It has been fan-translated in recent years and is well worth seeking out, if you're happy to dabble with a spot of emulation. *Bahamut Lagoon* sold almost half a million copies in Japan but no sequel was forthcoming.

culture is embedded in the mainstream," says Stuart. "It's lucrative now. I think the Internet has made the retro gamer's world smaller. The chances of finding a genuine bargain online are growing smaller. I can remember paying £60 for *Majyuuou: King of Demons* back in 2007 for my Super Famicom. I thought that was expensive. I've seen copies on eBay now for over £1,300."

The SNES is one of those machines that simply grows in stature as the years roll by, and there's a good chance that people will still be talking about it in respectful tones in another quarter of a century. But why did Nintendo's console have such a massive and long-lasting impact on gamers? Why is it so fondly remembered when the hardware which followed ushered in the era of revolutionary 3D realism?

"It was the final hurrah of the classic era of 2D gaming," answers Brendan. "It was a high point before the shift into the modern era of 3D polygons. As exciting as the N64 and its contemporaries were at the time, those games look dated. SNES games by comparison look gloriously retro. Also, the move to 3D created a huge increase in the complexity of games and their controllers which only enhances the charm of the 16 bit era." Chris Sutherland also feels it was the system's mastery of 2D which makes the SNES so beloved. "I think it was the last home console that used custom hardware devoted to 2D sprite games," he explains. "After that there was a transition to more general purpose CPU/GPU architectures. I think that's one of the reasons it stands out – it was almost the de facto machine for creating 2D games. Later consoles could still do that, but people started to veer towards 3D as it was the new thing."

» You can use this device to connect to the Satellaview. It reminds us of the old pictures of the CD-ROM add-on.

For hardcore fans like Stuart, it's all about the software. "It introduced so many franchises for Nintendo," he concludes. "To have new games like *Mario Kart*, *F-Zero*, *Starfox*, and *Pilotwings* released within the space of a few years was exciting. There was a drive behind Nintendo in those days to try new ideas, particularly in Japan, and that enthusiasm was instilled across third-party developers. Most games were coded by teams, so creativity and lack of interference was in full flow. Enix, Square, Konami, Capcom and countless others developed some truly stunning titles for the console. Recent fan translations have also breathed a new lease of life back into the console, with lots of Japanese-exclusives now being available to Westerners for the first time." So here's to another 30 years plus of Nintendo's legendary console. ✱

POUND SAVERS

Excellent Virtual Console options for those that can't collect the real deal

CASTLEVANIA: VAMPIRE'S KISS / DRACULA X

£200 (US) / £90 (JPN) / £225 (PAL) / (VC) £5.49

■ While it's not a patch on the PC Engine CD title from which it is derived, *Vampire's Kiss* is insanely collectable in its physical form, and demands a steep price for the most committed *Castlevania* fan. As such, this download is a much better choice for anyone interested in playing it.

FINAL FIGHT 3 £130 (US) £120 (PAL) / (VC) £5.49

■ The third *Final Fight* outing on the SNES may not be as refined as *Streets Of Rage 2*, but it's the finest example of the genre on Nintendo's console. Haggar returns with new allies and *Street Fighter*-style moves. Its pricey second-hand but this digital release is infinitely better value.

DEMON'S CREST £170 (US) / £125 (JPN) / £260 (PAL) / (VC) £5.49

■ A commercial disaster upon its release in North America, this spin-off from the *Ghosts 'N Goblins* series focused on Firebrand, an enemy in the original games who was elevated to hero in *Gargoyle's Quest*. A mixture of platforming and RPG, this is a true hidden gem.

MEGA MAN X2 £160 (US) / £25 (JPN) / £240 (PAL) / (VC) £5.49

■ The second *Mega Man X* game is notable on the SNES as it's the only home version of the game (a cut-down mobile game also exists). It builds upon the groundwork of *Mega Man X*, being far more action-packed than the earlier NES games and quite a bit easier too.

WILD GUNS £350 (US) / £160 (JPN) / £250 (PAL) / (VC) £5.49

■ A steampunk Wild West shooter with an excellent co-op mode and some brilliant, screen-filling boss battles, *Wild Guns* is yet another in-demand SNES release which requires deep pockets to own. Thank goodness, then, for this Virtual Console release.

EARTHBOUND £500 (US) / £20 (JPN) / £N/A (PAL) / (VC) £6.99

■ Recently available on the Wii U Virtual Console, *Earthbound* is a quirky and endearing RPG which, instead of featuring the usual fantasy setting, boasts a modern world invaded by aliens. The game never got a European release, and the American version is incredibly expensive.

SG-1

In order to see how far you've come, you need to remember where you came from. We look back at Sega's first home console, and explore why it deserves more appreciation than being wheeled out as a bit of trivia

The major adversaries vying for the hearts of gamers during the myriad console wars mostly come from either a background in consumer electronics (NEC, Sony), toys and games (Mattel, Nintendo), or computing (Microsoft, Commodore). With the exception of Nintendo, most of these contenders don't have a long history or ethos that was forged in the art of creating games, mainly relying on third-party support to build up libraries for their platforms.

You can count on the claw of a three-toed sloth the number of companies who would translate their primary business of gaming on the street to gaming in the home: Atari, SNK and Sega. Atari had the advantage of being first, and that novelty would propel its fortunes forward. SNK only achieved niche appeal, which leaves Sega as a special case in the pantheon of first-party developers.

Ever since its humble beginnings as a merger of two Japanese companies founded by American businessmen, Sega would straddle the divide between East and West with a global perspective. Its primary business was developing coin-operated hardware, which benefited from fostering a cross-pollination of ideas between the two worlds. By the early Eighties, Sega had moved beyond electro-mechanical coin-ops into videogames for the arcade market, becoming one of the top players in the industry. However, as the market began to slump in 1982, Hayao Nakayama, then-president of Sega, looked for new ways to expand his empire.

The idea of playing games in the home had not yet captured the imagination of the average Japanese

» [SG-1000] Fun Fact: *Bongo* was referenced in *Sega Hard Girls*, winning the award for the largest cleavage of any Sega character (oh dear – ed).

consumer. The 1981 Epoch Cassette Vision was the first reasonably-priced home console, but it faced strong competition from simpler all-in-one units and *Pong* clones. The Intellivision made it to Japanese shores via Bandai in 1982, but it was priced out of contention. Serious gaming was taking place on the dominant home computers from NEC, Sharp, Hitachi and Fujitsu at the time, but the entry fee into this club was dear. Seeing potential in this untapped market, Sega set about applying its arcade experience into developing a fairly priced console for the home.

In an interview with Famitsu in 1998, Sega's lead designer of consumer hardware development, Hideki Sato, looked back at Sega's first steps into the home. He confided that it was challenging to decide on which components to use in the new machine. A home console would sell tens or hundreds of thousands of units, and unnecessarily pricey components would greatly impact on the bottom line. Sato reasoned that the machine would be used for about 500 hours per year, and chose components to meet or exceed this durability and life span requirement. He settled on popular off-the-shelf ▶

» This charming fellow is Professor Asobin, the mascot for the SG-1000. He appeared on a lot of the device's packaging.

KEEPING IT ALIVE

Martin Wenting published Astrododge for the SG-1000 in 2012

Why did you decide to release *Astrododge* on the SG-1000?
I had fond memories of the SG-1000 and I was a bit surprised to see no physical homebrew releases for the system. At the time I was already working on getting *Astrododge* ready for the ColecoVision, so I started to work on a SG-1000 version of the game quite early on in development.

How easy or difficult was it to work with the hardware?
I knew beforehand that the SG-1000 had similarities to both the MSX home computers and the ColecoVision, so my approach was to keep the development of the game synchronised across all three platforms at all stages of development. However, the lack of documentation and homebrew for the system made things tricky.

Did the various SG-1000 system revisions and variations cause any headaches with compatibility?
The SG-1000 and SC-3000 had quite a bit of small differences which were difficult to find out, but luckily I had some great help from SC-3000 enthusiast Nick Hook during the beta-testing phase.

How does the SG-1000 compare to other systems you've developed games for?
I'm a huge Sega fan (having collected for almost all Sega systems), so the SG-1000 holds a special place in my heart. Otherwise, development was comparable to the ColecoVision version in terms of memory and features.

» [SG-1000] *Astrododge* proves that there's still plenty of love for Sega's first games console.

What's your favourite feature or proudest accomplishment in *Astrododge* for the SG-1000?
I think the number of moving multicoloured objects on screen is a nice accomplishment, as well as all the online functionality, such as online high scores and achievements.

Any difficulties in recreating the SG-1000 style packaging and/or cartridge shells?
Yes, it took quite a while to figure out how to approach the physical cartridge production. Because of the differences between the SG-1000, SG-1000 II and SC-3000. In the end we couldn't get the cartridge to fit perfectly in the SG-1000, so as of now it only works on SG-1000 II and SC-3000 systems.

Do you have any fond memories of the SG-1000? Any favourite games, hardware peripherals?
Yes, I like the fact that, like the ColecoVision, the system has many nice hardware add-ons such as the steering wheel and keyboard.

THE EXTENDED FAMILY

SG-1000

1983

■ The original design comes in two variations, a black label and a blue label. The black label version is harder to find.

SC-3000/SC-3000H

1983

■ The SG-1000's PC cousin, it comes in three colours and a full-stroke hard key 'H' revision that replaced the original rubber keys.

SG-1000 II

1984

■ The Mark II design would incorporate some ideas from its Famicom rival, and pave the way for the Mark III.

MARK III

1985

■ While not strictly part of the family, the Mark III is compatible with SG-1000 software and has composite and RGB output.

components: the ubiquitous Zilog Z80A processor, and, from Texas Instruments, the TMS9918A video display controller and the SN76489 sound generator.

Initially, the first system developed was the SC-3000, an 8-bit microcomputer aimed at beginners. However, Sega caught wind of Nintendo's plans to release a console that only played games, so a stripped back version of the SC-3000 was co-developed, removing the keyboard and adding a joystick. This aligned with Sega's observation that early users would mainly ignore the computing functions of the SC-3000 and play games. Sega did not abandon its home computing ambitions, though, and designed the SK-1100 keyboard accessory.

The SG-1000 launched on 15 July 1983 at an attractive price of ¥15,000, half of the SC-3000's price. It's difficult to be certain of the exact titles, but the first three games were *Borderline*, *Safari Hunting* and *N-Sub*. These games were first seen in 1980 on Sega's VIC dual-arcade board, which shared the same CPU as the SG-1000. While this made them easy targets for porting they weren't exactly household names, and felt dated by that time.

As the fickle fates would have it, Nintendo would also launch the Famicom on 15 July 1983, marking

» [SG-1000] *Zaxxon* is a hot contender for the title of SG-1000's killer app.

ESSENTIAL GAMES

The titles that made the SG-1000 shine

GIRL'S GARDEN ガールズガーデン

1984

■ Yuji Naka's *Girls Garden* stars Papri, the flower-collecting girlfriend of Minto, who ventures into a bear-infested forest to collect ten flowers for her beau. Flowers must be collected in full bloom – not too early or they're wasted and not too late when they begin to wilt – while distracting bears with honey pots.

HANG-ON II ハングオン II

1985

■ Though the SG-1000 lacks an outstanding killer app, the greatest claim to the title is probably *Hang-On II*, the exclusive SG-1000 'sequel' to the arcade sensation. While making obvious concessions to work on the diminutive hardware, it does a great job of recreating the experience and the iconic theme tune.

SPACE INVADERS スペースインベーダー

1985

■ At the time, *Space Invaders* on the SG-1000 was one of the most arcade-accurate ports of the game. Unlike the Famicom and Atari ports, the Invaders retain their look, and Sega added colours that sit somewhere between the monochrome version with rainbow coloured cellophane and the later colour-display re-release.

> **"The SG-1000 era is notable for constant refinement"**

the beginning of an intense rivalry between these two titans. While revisionist history would suggest that the SG-1000 was a flop from the onset and the Famicom reigned supreme, that's not the case. While the Famicom launched with superior hardware and a trio of recognisable games (*Donkey Kong*, *Donkey Kong Jr.* and *Popeye*), problems with a faulty circuit caused many initial units to freeze, resulting in a recall and a halt to production. Sega had expectation of selling 50,000 units in the first year, but partly due to its rival's misfortune, it sold three times as many, pushing 160,000 units into homes.

Sega didn't exactly skate through without any problems of its own, though, and the SG-1000 era is notable for constant refinement. In the first year, Sega released a short cable and socket to replace the original joystick. This was an important upgrade, as the original SJ-200 controller is notoriously rubbish.

Then, one year after its initial release, the SG-1000 received its first revision in July 1984 – the SG-1000 II or 'Mark II'. Taking cues from Nintendo, new joypads were designed to match the Famicom controllers, though they would retain optional stick attachments for the circular thumbpad. The keyboard expansion port was moved to the front, and the control ports were moved from the side to the rear. There were no upgrades to the internals, but revisions would replace several components, including the video processor, into an all-in-one chip.

By the end of 1983, Sega had released 21 titles compared to Nintendo's nine, but by the end of 1984 it was more evenly matched with the SG-1000 coming in

» [SG-1000] *Borderline* was re-released on the PS2 as part of the Sega Ages 2500 series.

at 32, versus the Famicom's 28. The competition was fierce and there is a great level of symmetry between the two libraries, which inevitably led to comparisons. The NES had smoother scrolling and more colourful sprites, while the SG-1000 struggled with juddering frame-rates and Spectrum-esque monochromatic sprites. The typical comparison is usually made between the Famicom's killer app *Donkey Kong*, and Sega's disappointing port of *Congo Bongo*. When *Bongo* was ported to the SG-1000, it would lose the arcade's isometric graphics, its key selling point: to show off a simpler game. This didn't win over fans and wasn't a match for Nintendo's *Kong*.

A better comparison between the two systems are their ports of Brøderbund's *Lode Runner*. Sega reprogrammed a faithful conversion of the Apple II game, retaining the original's single-screen graphics. Nintendo, on the other hand, would opt to let Hudson Soft adapt the game to better show off the Famicom's graphical capabilities. It zoomed in on the action, using larger, more detailed sprites, and used smooth scrolling to pan around the level. But more than this, Nintendo also demonstrated a greater willingness to work with

» *Borderline* was the first, and the 2008 Dreamcast re-release of *Border Down* was the last – there's a nice symmetry in those bookends.

third-party developers. Sega wasn't as keen on getting too cosy with its arcade rivals, preferring to license and reprogram SG-1000 games itself. Nintendo had fewer qualms about courting third-party developers and proceeded to lock them into licensing deals and exclusivity agreements. Perhaps the biggest early win was securing the rights to popular Namco titles, such as *Pac-man*, *Mappy* and *Xevious*.

All was not lost though, as Sega still had an edge in the arcades. The SG-1000 library was boosted by ports of big hits such as *Zaxxon* and *Zoom 909*. Sega also fought back against the Nintendo/Namco alliance by licensing popular Jaleco titles, such as *Pop Flamer* and *Exerion*, and also obtained licences to manga and anime properties.

Sega also adopted strategies that would be echoed later in the Mega Drive era. There was a focus on sports game titles, published under the *Champion Sports* ▶

DOKI DOKI PENGUIN LAND
どきどきペンギンランド
1985

■ This series began life on the SG-1000. The cute puzzler stars a father penguin, who must carefully push an egg to the bottom of the screen where the mother waits. Much like real life, the parent's wellbeing is unimportant as the egg must be protected at all costs.

GULKAVE ガルケーブ
1986

■ One of Compile's earliest shoot-'em-ups and a contender for the most graphically-impressive SG-1000 title, *Gulkave* features tight controls and fast gameplay, coupled with excellent and varied examples of parallax scrolling plus a kicking soundtrack. There isn't much to fault with this little gem.

NINJA PRINCESS 忍者プリンセス
1986

■ A year before Samus was fighting the good fight for female warriors in gaming, Sega had beat Nintendo to the punch in this ninja-themed run-and-gun. The original arcade game is similar and predates Capcom's *Commando*, but the tone and style is closer to later cute-'em-ups like *Pocky & Rocky*.

» ASCII's *The Castle* was a port of its earlier MSX game. A sequel later appeared on the MSX and NES.

» [SG-1000] *The Castle* is one of the more complex SG-1000 games, requiring plenty of exploration.

label. Nine titles were released in the series, including evergreen favourites such as *Baseball*, *Football*, and even *Kendou*. Some of these would be rebranded licences, like Logitec's *Super Golf* from 1981, while others were Sega originals. *Champion Boxing* was rising star Yu Suzuki's first project with Sega, featuring fantastically detailed art by Rieko Kodama (of *Phantasy Star* fame). Sega also courted celebrity endorsement, using popular Japanese comedy duo 'Tunnels' to promote systems.

Looking beyond Sega's improved software lineup, Hideki Sato felt the physical media on which the games were released could also use an upgrade. He remarked that the original cartridges resembled small black tombstones when inserted into the console. His proudest achievement from the era was the development of a cheerier and more pocket-sized alternative – the Sega My Card – games on microchips embedded in 2mm thick credit-card-sized slices of plastic, with a separate Card Catcher required to plug the cards into the cartridge slot.

Introduced in 1985 with some re-releases of titles, the compact design allowed game collections to be carried from house to house. Sega even experimented with a rewritable EPROM version of the My Cards, which could be overwritten with new games at specially equipped kiosks for a fraction of the usual retail cost, much like Nintendo's Famicom Disk System which arrived a year later. While Sega would eventually return to cartridges for higher memory capacity, NEC would later co-opt the My Card design for its PC Engine HuCards.

Sega would look beyond Japan to find more fans of the SG-1000, with the first wave of games even featuring boxes and instructions in both Japanese and English in preparation for a global audience. Grandstand Leisure sold rebranded Sega 1000s in New Zealand, and the SG-1000 II would also find a foothold across the East China Sea in Taiwan, distributed and rebranded by Aaronix.

In October 1985, Sega launched the SG-1000's successor, the Mark III system. Based on the cutting-edge System 2 arcade hardware, it was better equipped to stand toe-to-toe with Nintendo's Famicom. In a move that has been reused many times to retain brand loyalty, Sega ensured the Mark III was backwards compatible with original software, even sporting a dedicated card slot for the My Card format. Sega continued to package SG-1000 software in blue to indicate compatibility with both systems and would introduce red boxes to distinguish games that used the Mark III's advanced hardware.

> **"Sega would look beyond Japan to find fans of the SG-1000"**

Sega continued to release more SG-1000 games after the release of the Mark III, including such hits as *Wonder Boy* and *Hang-On II*. The last couple of games were *The Black Onyx* in 1986, a port of Bullet Proof Software's very old school RPG, and a Sega-developed *Sherlock Holmes* game titled *Portrait Of Loretta*.

In the end, Sega would be a distant second to Nintendo, and even with the superior Mark III hardware, only managed to carve out a 10 per cent share of the market. However, it also fended off all other contenders to hold on to that second place, and managed to sell about 2 million units worldwide. In a world where the Famicom didn't exist, these metrics would have led to the SG-1000 being regarded as a huge success, however it was overshadowed by Nintendo's own worldwide breakout.

The SG-1000 would fade from memory for many decades, as Sega and its fans looked towards the Mega Drive and Saturn eras for nostalgia. However, the 'underdog' status that Sega found itself in from the beginning would help to forge a passionate community around its history. In 2001, there would be several references to the SG-1000 in the parody game *Segagaga* on Dreamcast, including a cameo by the SG-1000 mascot Professor Asobin. *Astrododge*, while the first

RAREST GAMES

These will make your wallet tremble in fear...

PACHINKO パチンコ

ESTIMATED COST: £750+/$1500+

■ This is perhaps the most notoriously rare SG-1000 title. The game is a simulation of the gambling obsession. Its rarity can be attributed to its poor sales in the wake of *Pachinko II* being released afterwards. The 'sequel' is more like an update: it includes the basic table from the original, plus two variations.

SPACE SLALOM スペーススラローム

ESTIMATED COST: £500+/$1000+

■ Arguably rarer than *Pachinko*, *Space Slalom* is also the smallest SG-1000 game at only 8KB. The weight of evidence suggests that Sega ported an undumped and possibly unreleased arcade game by Eighties developer Orca. After going bankrupt (twice!), members from the Orca team would go on to form Toaplan.

SANNIN MAHJONG 三人麻雀

ESTIMATED COST: £50+/$100+

■ Due to its lacklustre sales, most of the Othello Multivision releases are hard to find and will set you back a bit, especially if you prefer to have your games CIB. *Sannin Mahjong* is perhaps the rarest, due to its less-than-exciting appeal and competition from two other *Mahjong* releases from Sega.

homebrew game in over two decades, was released by developers Revival Studios in 2013. In the same year, to commemorate the 30th anniversary, Sega commissioned a four-disc album featuring music from the SG-1000 and Mark III library. The heart and soul of SG-1000 collecting today is in the software (which is region free). While a Nintendo fan has the task of tracking down over 1,000 games for completion purposes, Sega fans need only concern themselves with 42 cartridges and 29 My Cards.

Looking at videogaming history broadly, you'd be forgiven for thinking that the Atari 2600 came first, followed by the Nintendo NES/Famicom. From this viewpoint, discovering the SG-1000 feels somewhat like finding the missing link. It bridges the gap between the purity of Atari, and the colourful and smooth-scrolling Nintendo games that kick-started the next generation. It comes from a period where Sega was just starting out – experimenting, developing its talent and finding its distinctive 'blue skies' feel. If you've got a penchant for simple thrills and a love for uncomplicated graphics, don't be afraid to dig in, the SG-1000 is worth exhuming. ✱

Thanks to Ross O'Reilly for research and translations.

» [SG-1000] *Phoenix Rie's* large animated graphics in *Champion Boxing* are quite impressive, given the limited hardware

Q&A WITH YU SUZUKI

The legendary developer talks about his early days with the SG-1000

Champion Boxing was your first game at Sega (co-developed with Yoshiki Kawasaki and Rieko Kodama). What was it like to develop the game on SG-1000 hardware?

Ms Kodama was a freshman designer at the time she was assigned to the game. We started this project as a test, so at first Ms Kodama was the only designer. We were understaffed for designers, so I remember helping out doing the drawings for things like the jab, straight and uppercut motions.

Mr Kawasaki was assigned as the designer for the background audience. Despite the limited memory, he was able to portray a variety of pattern and colour changes. At that time, I was also in my freshman stage, so it was reassuring to have someone as able as Mr Kawasaki on the team. Later on, we put Mr Kawasaki's skills to good use designing bikes and [other elements] for *Hang-On*.

Were there any lessons learned in the development of _Champion Boxing_ that you carried over to your future titles?

Championship Boxing was a minor project with a limited number of people working on it, so it gave me the opportunity to learn the game program flow, and how to interact with the other departments without too much pressure. If I did not have that familiarity with the whole of the process, I do not know if I would have been able to manage the larger projects like *Hang-On* which came right at its heels.

At that time with Sega, it was said that in order to become a project leader it would take at least seven years. Although it was a small project, I was promoted in my first year, and I believe that this success led me to the next game project. I thank Mr Yoshii, my boss, because if he hadn't given me the chance, I would not be who I am today.

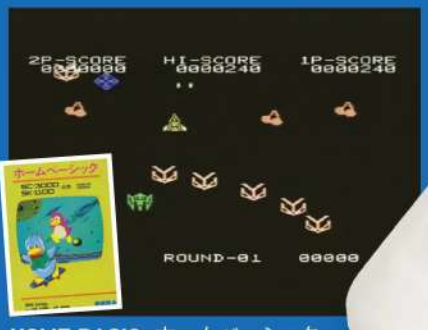
What is your opinion of the SG-1000 as a hardware platform to work on?

I have always approached game development by trying to squeeze the most performance out [hardware] as I can. With the SG-1000, memory was limited, so without getting creative, it was difficult to get it to stand out from other SG-1000 games.

When you're competing on a level playing field, I felt the strength of the software would be best expressed stylistically. Even from the start with making *Champion Boxing* for the SG-1000, my focus was on how far I could stretch the limits of the system. We were able to get details, like the facial expressions when the boxer got hit, to a point beyond other SG-1000 games.

People started thinking *Champion Boxing* could be used as it is in arcade machines. So we stuck an SG-1000 in an arcade cabinet at a game centre as a test. The results were so positive, we even ended up managing that location.

Yu Suzuki is currently working on Shenmue III and you can support the campaign at: ***shenmue.link***



HOME BASIC ホームベーシック

ESTIMATED COST: £150+/$300+

■ There are a number of BASIC cartridges released for use with the SK-1100 keyboard attachment. They feature increasingly more advanced versions of Sega BASIC and larger amounts of RAM for writing, saving and loading programs to cassette tape. The one to look for is Home BASIC, one of the last revisions released in 1985.

THE RARE JEWELS FROM TAIWAN...

■ Taiwanese companies kept the SG-1000 alive long after official support dried up. Despite the initial popularity of the SG-1000 in Taiwan, the market was soon swamped by cheaper unlicensed 'Famiclone' hardware and software, so finding these games today, even in their native country, is quite a challenge.

Sinclair ZX80

SPECIFICATIONS

Year released: February 1980
Original price: £79.95 (kit), £99.95 (assembled)
Processor: Zilog Z80A (running at 3.5MHz)
RAM: 1KB (expandable to 16KB)
ROM: 4KB (expanded 8KB ROM later available)
Onboard language: Sinclair BASIC
Display: 32x25 characters
Associated magazines: *Sinclair User, ZX Computing*

IN THE BEGINNING THERE WAS THE ZX80. THEN THE ZX80 BEGAT THE ZX81, AND THE ZX81 BEGAT THE ZX SPECTRUM, AND SO BEGAN BRITAIN'S LOVE AFFAIR WITH THE HOME COMPUTER. WE LOOK BACK AT THE MODEST LITTLE MICRO THAT STARTED IT ALL

When people write about the Spectrum, it's almost mandatory to prefix the machine with the word 'humble'. As in the humble Speccy, with its limited colour palette, primitive 'beeper' sound, a maximum 48KB of memory, and its silly rubber keyboard. But when placed alongside its primitive forebear, the ZX80, the Spectrum looks more like that all-powerful WOPR thing out of *WarGames*.

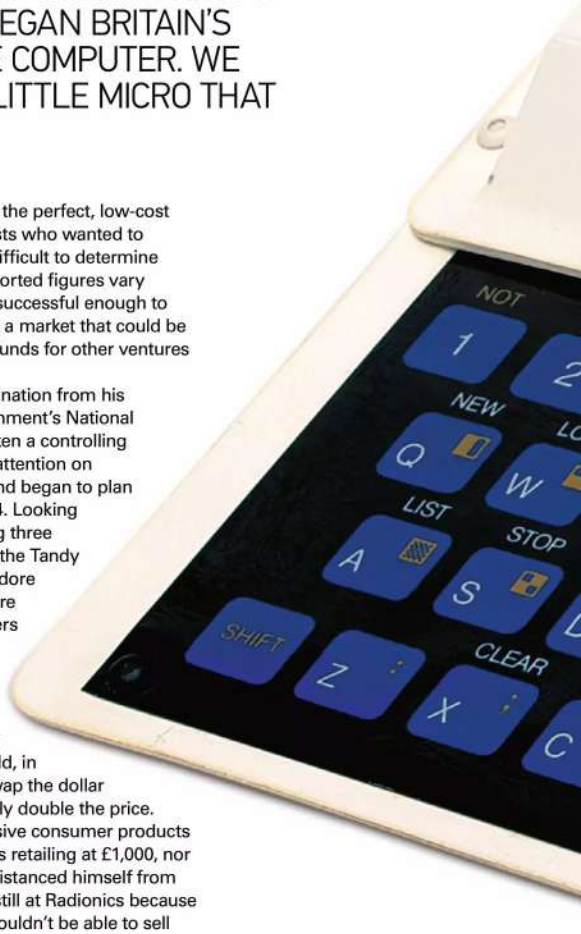
In comparison, the ZX80 featured a monochrome display, no sound output, a measly 1KB of memory and an awkward membrane keyboard. To hamstring things further, the processor at the machine's heart was required to do everything, from reading keyboard inputs to updating the screen, and it obviously couldn't multitask, so the display would flick off when a key was pressed or the CPU was busy executing a program, which, to all intents and purposes, ruled out animated games. Only a couple of years separated the release of the ZX80 and the Spectrum, but there's almost a generation gap between the two machines – a clear sign of the speed at which the personal computer market was moving in the early Eighties. Component costs were tumbling, innovation was rocketing, and computers that were actually useful in an everyday sense were invading homes and businesses. The ZX80 may have been quickly superseded, yet it played a key role in demystifying and popularising the micro, particularly in the UK. It also provided Sinclair with the impetus to expand the ZX line. After all, we wouldn't even be banging on about the Spectrum were it not for the groundwork laid by the ZX80.

The development of the ZX80 was very much a gamble that paid off handsomely for Sinclair.

The development of the ZX80 can be traced back to 1978. In June that year, Clive Sinclair's micro-computing arm Science of Cambridge released the MK-14, a kit computer with a calculator keypad and an 8-digit LED display that retailed for £40. Although the assembled kit was of little practical use, it was the perfect, low-cost training aid for students or hobbyists who wanted to learn about microprocessors. It's difficult to determine just how many kits were sold – reported figures vary from 10,000 to 50,000 – but it was successful enough to show Sinclair that computers were a market that could be tapped, even if it was just to raise funds for other ventures within his business.

In 1979, following Sinclair's resignation from his Radionics firm, of which the government's National Enterprise Board had taken a controlling interest, he focused his attention on Science of Cambridge and began to plan a successor to the MK-14. Looking to the US, he saw the big three machines – the Apple II, the Tandy TRS-80 and the Commodore PET – and while they were proper desktop computers designed for real-world application, they were also hugely expensive. The retail prices were even more prohibitive in the UK, where import dealers would, in time-honoured tradition, simply swap the dollar sign for a pound sign and effectively double the price. Sinclair's notion of selling inexpensive consumer products certainly didn't embrace computers retailing at £1,000, nor even half that amount. In fact, he distanced himself from the Newbrain micro project while still at Radionics because its planned scope meant that he wouldn't be able to sell it cheap enough to attract a wide enough market. So he set about developing the ZX80 as a capable, low-cost computer that he could retail for that magic, consumer-pleasing price of £100.

It was a noble aim, but Sinclair was a businessman and he knew that any product still had to turn a tidy profit.



INSTANT EXPERT

- The processor inside most ZX80s was not actually a true Z80A, but rather a copy by NEC named the 780-C.
- John Grant, the creator of Sinclair BASIC, originally suggested that Forth might be a better choice of programming language for the ZX80. He was overruled. Sinclair later published a version of Forth for the ZX81.
- Rick Dickinson is often identified as the ZX80's industrial designer, but it was actually John Pemberton who designed the casing. Dickinson did design the RAM packs for the computer.
- Like a lot of Sinclair's most memorable products, it was a marvel of miniaturisation, measuring 208mm by 159mm – that's roughly half the size of the page you're currently reading.
- It was extremely light and portable, too, weighting just 340 grams.
- There were very few external connectors – a TV out to connect a standard television, ear and mic ports for a cassette recorder to save and load programs on tape and an edge connector for attaching memory packs and peripherals.
- The first ZX80s to be sold were assembled by an electronics outfit in St Ives, but when demand outstripped supply, production was moved to the Timex factory in Dundee.
- After launching in the UK, the ZX80 was exported to many countries around the world including the US, Germany, France, Australia and Japan.
- The expanded 8KB ROM essentially turned the ZX80 into a ZX81, with the exception of the NMI generator. However, third-parties offered their own hardware solutions, which blessed the ZX80 with SLOW mode.
- The ZX80 could use the black 16KB RAM packs designed for the ZX81. With the 8KB ROM, and an upgraded power supply, it could also power the ZX Printer.

SINCLAIR ZX80

To keep the component budget down, long-standing Sinclair engineer Jim Westwood put together a simple hardware design based around the Z80A processor, which consisted entirely of off-the-shelf chips. It wasn't particularly innovative – and the aforementioned flickering display was an unfortunate flaw – but it was a considerable step on from the MK-14. The board and its 21 chips were housed inside a moulded plastic two-piece case designed in-house by John Pemberton. The most curious element of the ZX80's industrial design was the pressure-sensitive 'keyboard', which was basically a plastic sheet with 40 keys printed on it, and by prodding a key, contact would be made with the circuit board tracks beneath and the key press would be registered. It was cheap and not entirely cheerful, particularly after prolonged use.

Further compromises were made with the internal software. A 4KB ROM was provided to store the ZX80's system software, including BASIC, and the unenviable task of trying to cram so much onto such a tiny chip was handed to John Grant of Nine Tiles. Using the ANSI Minimal BASIC standard as reference, Grant spent the summer of 1979 creating the very first version of Sinclair BASIC. In order to meet the 4KB limit, some commands and functionality had to be dropped, with one of the main drawbacks being that the ZX80 could only deal with whole numbers. The dialect was aimed very much at beginners and introduced the one-touch keyword entry system that would become the hallmark of Sinclair BASIC. This idiosyncratic approach ensured that commands could not be mistyped, and to further reduce the chance of errors on code execution, the syntax of each line was checked for faults as it was entered. Considering the restrictions of the ROM chip, Grant's work was mightily impressive and must surely have helped establish BASIC as the language of choice for home micro manufacturers.

The ZX80 was officially launched at a London computer fair in February 1980 and made available to buy direct from Science of Cambridge. Sinclair wanted to market the first ready-assembled computer to break the £100 threshold, and that's exactly what he did. An assembled ZX80 retailed for £99.95, and if you were handy with a soldering iron, you could buy the kit for £79.95. The first review appeared in the April 1980 issue of *Personal Computer World* magazine. "The ZX80 offers an ideal introduction to computing," wrote David Tebbutt. "It makes BASIC easy to learn, it's small enough for it not to be intimidating, and it's cheap enough that, should you decide computing is not for you, you can give it away, sell it or whatever. The ZX80 appears to be a well thought out machine both in terms of hardware and software, leaving me very little to say except that I hope Mr Sinclair and his merry men of Cambridge can cope with the expected flood of orders." Perhaps Tebbutt had previous experience of Sinclair's haphazard mail order operation, because the orders did indeed flood in and, predictably, many customers had to wait months for their machines to arrive.

As the ZX80 wasn't sold through shops, actual sales data is hard to pin down. An article in *Practical Computing* magazine from July 1982 claimed that Sinclair ordered enough component parts to make exactly 100,000 ZX80s – and sold all of them. In April 1983, Sinclair announced that his was the first company to sell more than 1 million home computers worldwide, and this figure included 130,000 ZX80s. More conservative reports estimate that sales were somewhere between 50,000 and 70,000. Even if sales reached the lower end of that estimation, it was still a considerable achievement. Its success was all the more startling because, even with a sub-£100 price tag, the ZX80 was far from an impulse purchase. What sealed the deal for many potential buyers, especially in the UK, was the reputation of Clive Sinclair himself. After all, computers were just the latest addition to his firm's range of innovative products, which included pocket calculators, digital watches and miniature TVs. Sinclair was Britain's favourite boffin, and general punters were far more likely to trust 'Uncle Clive' than some new start-up or some faceless computer conglomerate from across the Pond.

Despite impressive sales of the ZX80, Sinclair did not attempt to capitalise with a slew of upgrade options. At launch, an improved 8KB ROM was promised that would beef up the BASIC with improved mathematical and file-handling functions, but for the first 12 months of the ZX80's life, owners had to make do with official RAM packs. The first of these housed 1-3KB of RAM, with the full 3KB complement costing an eye-watering £60. One ZX80 owner who was not willing to fork out that much money was Nick Lambert of Southampton, who decided to build his own 3KB RAM pack instead. Seeing that it was possible to undercut Sinclair, he went on to start a business and sold his memory upgrades

This unique ZX80 with clear plastic casing was a test created by the moulding company. It's currently part of Rick Dickinson's private collection.

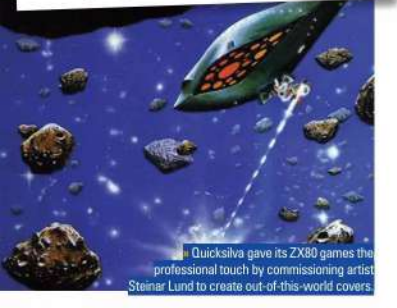
COSTLY KIT

It's well known that ZX80s are sought after these days, with boxed examples fetching upwards of £200, but one recent eBay auction eclipsed all others. On offer was a mint, unassembled ZX80 kit, and the winning bid was a head-spinning £1,500!

We contacted the seller, Tim Starkie, and he told us that the transaction completed without a problem and the buyer, who was based in Poland, was happy with his purchase. But what's the story behind the kit itself? Tim says: "I bought the kit in 1981 when I was trying to get a job at Sinclair, to show some interest and enhance my application. This was sadly unsuccessful. I actually managed to join Sinclair in 1984 and worked on the design of the flat-screen TV and the Spectrum 128. It was due to the Sinclair exposure in the recent *Micro Men* TV programme that I decided to sell the ZX80 kit – I thought that the heightened awareness may increase the selling price. Was I in for a surprise! I never thought it would be worth that much. Several of the unsuccessful buyers have since contacted me to say they wished they had bought it. One of my work colleagues said that my future grandsons will say, 'Stupid granddad. He sold that kit for £1,500 in 2009 and now it's worth £10,000!'"

» If you installed the upgraded 8KB ROM you could play the legendary time drain *Football Manager* on your ZX80. Back of the net!

» Quicksilva's Nick Lambert started the company out of his back bedroom in Southampton.



» Quicksilva gave its ZX80 games the professional touch by commissioning artist Steinar Lund to create out-of-this-world covers.

» The 8KB ROM upgrade for the ZX80 came with a keyboard overlay, which featured all of the new commands.

COMMUNITY THE BEST ZX80 RESOURCES ON THE WEB

Grant's ZX80 Site

http://searle.hostei.com/grant/zx80/zx80.html

If you're a technically minded retro nut then Grant Searle's website is a must. His hardware page provides a detailed guide to building your own ZX80 using off-the-shelf components that are readily available today. It even includes authentic keyboard overlays to print out and use.

Scot's ZX80 Site

https://archive.li/Dd5wg

There's nothing unique about Scot's small site, but it serves to pull together all the interesting ZX80 information scattered around the web, including manuals, reviews, and adverts. It also includes the *Space Intruders* program that you can download and run in an emulator. No$ZX81 is our recommended emulator.

ZX80/81 Forums

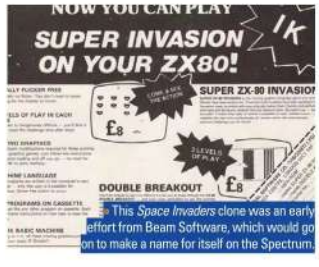
tinyurl.com/ykb8q9n

If you're looking for general information or specific technical advice, you can guarantee that the knowledgeable bunch on here will be able to help you out. The forum also includes sales and wanted sections where users can trade bits of kit. The admin is well-respected Sinclair enthusiast Rich Mellor.

ZX81 Stuff

tinyurl.com/ykgtqlh

This site really is the ZX81 equivalent of World of Spectrum, as it includes information on hundreds of games and provides the files for you to emulate them. The interest for ZX80 fans is that a number of 81 games also work on the 80, providing it had the 8KB ROM fitted, so you can uncover those here.



» This *Space Invaders* clone was an early effort from Beam Software, which would go on to make a name for itself on the Spectrum.

via mail order for £40. Nick named his company Quicksilva and released a number of expansions for the ZX80, including a nifty sound board. He also began experimenting with games and programmed a version of the arcade hit *Defender* for the ZX80.

The general thinking was that animated games were not possible on the machine due to the flickering display, but ingenious coders worked out a way to overcome the problem. The breakthrough was made by Ken MacDonald of Macronics Systems, who wrote an interrupt routine. Basically, he realised that the CPU was only updating the display 80 per cent of the time due to the vertical blanking interval. During this period, when no picture information was being actively generated, code could be timed to run without affecting the display. He named the routine Amazing Active Display and used it to create ZX80 games based on *Breakout* and *Space Invaders*. The program listing for the latter, titled *Space Intruders*, gained exposure after being published in the book *Making The Most Of Your ZX80* by Tim Hartnell. Other programmers then used MacDonald's method to write their own smoothly animated games. If you picked up issues of *Personal Computer World* or *Practical Computing* in early 1981, you'd find a small number of ads for ZX80 games on cassette. They were mostly arcade clones or board games, with the two best-known developers being Quicksilva and Bug-Byte. The ZX software scene would soon flourish, though, with the unveiling of the ZX81 in March 1981.

The ZX81 was very much an updated ZX80 rather than a new computer – indeed, development titles for the machine included ZX80 II and ZX80 Series B. Screen flicker was overcome by the inclusion of a non-maskable interrupt generator, and it shipped with the long-awaited 8KB ROM, which was also sold separately as an upgrade for ZX80 owners. The main change, however, was the reduction of the number of internal chips from 21 in the ZX80 to a mere four in the ZX81. This redesign meant Sinclair could offer more features for less money – just £49.95 for the kit or £69.95 ready-built. The new price and spec saw ZX81 sales rocket past those of its predecessor, with 1 million units sold during its first two years.

It's often suggested that the ZX80 kick-started the home computing craze in the UK. However, in truth, the ZX81 deserves to take more credit, thanks mainly to the sheer numbers sold and the home-grown industry that sprang up to support it. But in its own right, the ZX80 was a plucky contender that perfectly realised Sinclair's aim of making computing accessible and affordable to the man on the street.

And just like that all-powerful WOPR thing out of *WarGames*, it too could play a perfect game of tic-tac-toe.

Special thanks to Tony Barnett for supplying us with his own personal ZX80.

ACORN ELECTRON

ACORN ELECTRON

IT'S BEEN OVER THREE DECADES SINCE THE INTRODUCTION OF THE ACORN ELECTRON. HERE WE REFLECT ON THE TALE OF THE BEIGE BOX THAT WENT FROM MUST-HAVE CHRISTMAS PRESENT TO THE 8-BIT OUTCAST THAT ALMOST SUNK ONE OF BRITAIN'S MOST BELOVED COMPUTER MANUFACTURERS

Year released: 1983

Original price: £199

Buy it now for: £10-£20

Associated magazines: Electron User, Micro User, Acorn User, A&B Computing, Acorn Programs

Why the Acorn Electron was great… The Electron offered the main functionality of the BBC B at half the size, and at a fraction of the cost. It had strong software backing, and boasted one of the best keyboards of any computer, with great feel and responsiveness, and a variety of shortcuts to common BASIC commands. And it was built to last, too.

After the roaring success of the BBC Microcomputer, Acorn was a company going places. It had conquered the schools market almost unchallenged, and with a cheaper, cut-down sibling to the Beeb designed for home use on the way, it was massively confident that it could dominate the marketplace. Four months ahead of the Electron's launch, joint managing director of the company Chris Curry was in bullish mood. "We are not placing any limits on the size we can grow to," he told *The Times*. "We see the Electron as a very powerful threat to the existing dominance by Sinclair and the Commodore VIC-20. We hope to get half the home computer market."

"It was absolutely manic – an insane time really," recalls Tom Hohenberg, Acorn's former marketing manager. "There were exhibitions going on all the time, and there'd be 50,000 to 60,000 people besieging the stands. The BBC Micro was selling like hot cakes – we couldn't make them quickly enough – so there were huge hopes for the Electron. Half the size, half the price, and the same sort of power. We were buzzing."

Lessons had clearly been learnt from the supply problems that had beset the BBC. Thankfully, due to the machine's tie-in with the broadcaster, the Beeb still went on to become very successful. Six months ahead of the Electron's launch, Curry told *The Guardian* that the new model would not even be advertised, let alone sold, until they were "completely confident that stocks are available". "More than almost anybody else we have suffered in the past from problems of lack of product when the demand is high," he said. "We are not going to let it happen again."

Launch day arrived on 23 August 1983, and anticipation was massive. The first review of the new machine was in, and so glowing that Acorn quoted it extensively on the full-page advertising it took out in the newspapers. "Compared to other micros in its price range, the likes of the Spectrum, Oric and VIC-20, the Electron wins on all counts," *What Micro?* magazine said. "It has better graphics, a better keyboard, and faster and more versatile BASIC. Acorn had better be ready for a rush, there's going to be one." If only Acorn had paid closer attention to that last line.

Acorn's strategy was to show parents that the Electron was a way of bringing their learning at school on the BBC into the home, and a £300,000 TV ad was commissioned to make the point. "It took three days to shoot, and was quite an epic production," says Hohenberg. "There were lots of kids and several sets. We

INSTANT EXPERT

The Acorn Electron was a cut-down version of the BBC Model B, retailing for half the price of its bigger brother. The Electron originally retailed for £199 from August 1983 to January 1985, before being cut to £129 and later to £99.

The Electron's size was based on a cardboard tissue box. It was roughly half the depth of the BBC Micro, although the Plus 1 and Plus 3 expansion boxes released for it increased its dimensions to approximately the same size.

Acorn spent £3.3 million on TV advertising to showcase the Electron in the months following its August 1983 launch. Prior to this campaign, its advertising budget was £1.5 million across the entire company.

300,000 Electrons were ordered following the machine's launch. Due to a problem with production of the computer's ULA chip, however, only one in ten worked, meaning that only 30,000 reached shops by Christmas 1983.

Like the original IBM PC and ZX Spectrum, the Electron features just one sound channel, cut down from the BBC's three melodic and one noise channels.

Most Electron titles run on the BBC, although due to the cut-down hardware, many BBC releases won't run on the Electron, and some of those that do run too fast to be playable.

At its peak in 1985, market research showed that the Electron was the UK's joint second bestselling computer, alongside the Commodore 64, but behind the Spectrum.

Somewhere between 1,200 and 1,500 games are estimated to have been created for the machine, as well as several hundred more educational titles.

Two dedicated emulators exist for the Electron – Tom Walker's Elkulator and Thomas Harte's ElectrEm.

Good condition second-hand models now sell for around £10-£20 on eBay. The official Acorn tape decks and Plus 1 and 3 expansion boxes are relatively rare in comparison and often fetch sums in the region of £20-£30 each.

COMMUNITY ELECTRON SITES TO WATCH

Acorn Electron World
www.acornelectron.co.uk
The best resource for the Electron there is, with disk images, reviews, a vast PD archive, magazine scans (including every issue of *Electron User*), and the entire *EUG* back catalogue. Also, it's "*Desperate* to track down any games it hasn't got, and will pay good money!"

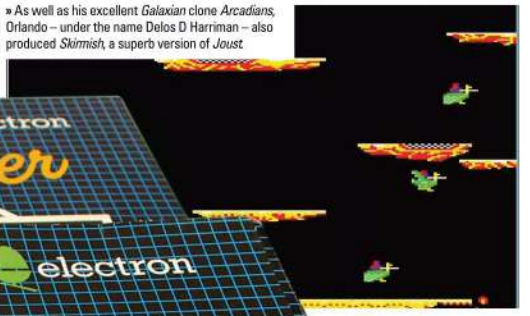
Stairway To Hell
www.stairwaytohell.com
Fantastic site dealing with the BBC and Electron, with massive archives of disk and tape images, articles, utilities, the excellent Lost And Found guide to rumoured and unreleased games, plus the most active 8-bit Acorn-related forum on the web.

Retro Software
www.retrosoftware.co.uk
Fast-rising software house, headed by Stairway To Hell founder Dave Moore alongside 'Samwise'. News on various works in progress including *Repton: The Lost Realms*, plus an active forum and various useful development tools for aspiring programmers.

The BBC Lives!
http://archive.retro-kit.co.uk/bbc.nvg.org/
It's gone without updates for years, but this is still a fantastic resource for all 8-bit Acorn machines, featuring a staggering amount of documentation for anyone interested in contributing to the homebrew scene.

What Micro?
The Election is bound to be compared to the BBC Micro. However it would be better compared to other micros in its price range, the likes of the Spectrum, Oric and Vic 20. There is however no real comparison as the Electron wins on all counts – it has better graphics, a better keyboard, faster and more versatile Basic. We rate the Electron higher than any of its competition. Acorn had better be ready for a rush, there's going to be one.
What Micro? Sept. '83

» As well as his excellent *Galaxian* clone *Arcadians*, Orlando – under the name Delos D Harriman – also produced *Skirmish*, a superb version of *Joust*.

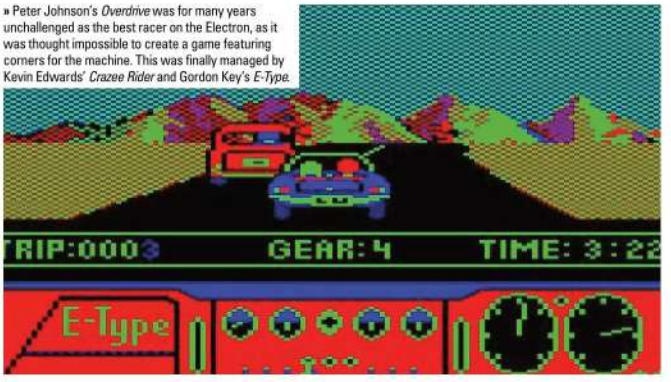


VERSIONS

BBC Model B
The big daddy of the Acorn range, this mainstay of the classroom, produced to tie in with BBC TV's Computer Literacy Project, boasted the same 32K as the Electron, but offered four-channel sound and improved graphics capabilities. Key additional features include support for Teletext and the low-cost networking system Econet. Later models included the short-lived B+ models, available in 64K and 128K flavours, although all the B range was eventually superseded by the BBC Master series.

Expanded Electron
Acorn's Plus 1 expansion box added two ROM cartridge slots, plus an analogue interface – often used for joysticks – and a parallel port to enable connectivity with a printer. The Plus 3 came complete with a 3.5-inch floppy disk drive. With both Plus 1 and 3 attached, the dimensions of the Electron became almost identical to the BBC Micro. Other third-party expansion boxes included the Slogger ROMbox and ROMbox Plus, and Millsgrade Ltd's Voxbox speech synthesizer.

BT Merlin M2105
A highly sought-after oddity for hardcore collectors of Acorn hardware, the Merlin consists of a debadged Electron attached to an expansion box, which incorporates a built-in modem and features a printer interface. The Merlin was used throughout all of the UK's Interflora shops from a pilot scheme in 1985 through to the mid-Nineties, and was used to transmit orders around the country. According to internet sources, a speech synthesizer is also apparently incorporated into the rear unit.



» Peter Johnson's *Overdrive* was for many years unchallenged as the best racer on the Electron, as it was thought impossible to create a game featuring corners for the machine. This was finally managed by Kevin Edwards' *Crazee Rider* and Gordon Key's *E-Type*.

spent £3 million on airtime." The marketing of the machine was so successful that a reported 300,000 orders were received for the run-up to Christmas 1983.

Significantly reduced in size from its predecessor, but lacking some of the features and connectivity, the Electron's dimensions had in fact been based on a tissue box, after Acorn found itself unhappy with the case put forward by an industrial designer. "It will have been six to nine months to do the basic design, but then there were problems with the ULA," says former Acorn hardware designer Steve Furber. "We were geared up to produce 300,000," continues Hohenberg, "and then the ULA, the heart of the machine… only one in ten of them worked."

As a result, only 30,000 Electrons hit the shelves in this period. "All these families had promised the kids an Electron for Christmas, and it just wasn't obtainable," says Hohenberg. "We'd get a shipment in, then there'd be a stampede. People were fighting in Rumbelows." The Manchester branch of WHSmith reportedly received 1,500 phone enquiries in one week alone from people desperate to find one in time for Christmas.

Despite the production problems, support for the Electron steadily grew. Acorn's software arm – Acornsoft – led the charge, and its first batch of games included some superb conversions: *Snapper* (an excellent *Pac-Man* clone), *Meteors* (*Asteroids*) and *Monsters* (*Space Panic*), as well as Peter Irvin's fine space-based shooter *Starship Command*. "I sent it to several publishers who all wanted it," he explains. "But I decided to go with Acornsoft because, although their royalty rates were lower, I thought they were the better publisher."

The other main player on the Electron software scene in the early days was Leeds-based Micro Power. Fine conversions of *Frogger* and *Donkey Kong* – *Croaker* and *Killer Gorilla* – sold well, but the real gem was the outstanding maze-based shooter *Cybertron Mission*, heavily influenced by *Berzerk*. Alongside the early software players came the arrival of *Electron User*, the only magazine dedicated solely to the Electron. Launched in September 1983, it became vital to the machine's user base.

Late 1983 also saw the first Electron offerings from Superior Software, a company that would become the most important and long-lasting supporter of the machine. Already active on the BBC scene, Richard Hanson's company was wary of Acorn's supply problems, but dipped a toe into the market anyway. "Richard spent half the night reprogramming a one-armed bandit simulator," says ex-Superior man Steve Botterill. "Beeb sales were brilliant, but it took until the end of the year before Electron sales picked up. We had put about half-a-dozen titles together for it to see how it would go." After small numbers were initially picked up in the countdown to Christmas, Superior Software's big break for the Electron arrived. "In February, WHSmith ordered 1,000 each of seven Electron titles," Botterill recalls. "This marked the start of the Electron selling big numbers."

By February, a backlog of 200,000 orders for the Electron itself reportedly still remained. Acorn's production troubles soon eased, but the missed Christmas rush resulted in tens of thousands of machines arriving into the country with only a fraction of the demand for the machine remaining. "We had this warehouse in Wellingborough," Hohenberg recalls. "Before Christmas, the trucks were lining up at one end wanting to take the few Electrons we had away to stores, but now the trucks were all at the other end, delivering, and the market had completely dried up. Seeing Electrons piled floor to ceiling… it was very depressing."

And the company's troubles didn't end there. Shortly after the Electron's launch, Acorn had attempted to capitalise on its expected success by advertising 11.23 million shares for trading on the London Stock Exchange. The company's performance in the market was soon described in *The Times*, however, as "abysmal". Coupled with ill-fated attempts to set up operations in the USA and Germany, from a position of enormous financial strength, the company soon found itself in serious difficulty. Even Acorn's much-prized contract with the BBC was said to be under threat.

The software market for the Electron was gaining in strength, however. 1984 saw the arrival of Acornsoft's classic *Elite*. "The Electron version was more restricted than the BBC disk edition," says David Braben. "The video hardware on the Electron was very poor compared to the BBC, and we couldn't do some of the trickery we did on the BBC to save memory – this is why it was black and white on the Electron." Even in cut-down form, Electron *Elite* remains one of the finest technical achievements on the machine, and although Braben wasn't overly happy with the version, he and co-author Ian Bell have left one lucky user a present: "We never bought an Electron – one was loaned to us by Acorn, and when we finished, we attached a note to the inside of the case, saying '*Elite* was written on this machine'," he says. "We both signed it, so somewhere, hopefully, it's still there in someone's machine."

Other 1984 arrivals included A&F's *Chuckie Egg*, as well as the evergreen (literally) *Repton*. This *Boulder Dash*-influenced series was Superior's biggest seller, and loomed over the 8-bit Acorn scene throughout the Electron's life. Acorn's popular Plus 1 and Plus 3 expansion boxes were launched too, between them adding joystick and disk-drive interfaces, as well as ROM cartridge slots.

Doubtless spurred on by the steadily increasing user base, Acorn seemingly rallied. The BBC contract was renewed, and by September sales of the Electron were said to be over 90,000. A stronger than expected Christmas saw this number double, with a Dixons spokesman expressing delight that the Electron was selling "four to five times as well as we had expected". This in spite of Acorn sticking to its £199 launch price, the same price as the heavily discounted C64, and vastly more expensive than the all-conquering £129.99 Spectrum 48K. In January 1985, however, Sir Clive Sinclair put the squeeze on still further, slashing the price of the Spectrum+ to £129.99. Acorn responded immediately, dropping the Electron

SPECIFICATIONS

CPU: Features a 6502A processor, running at a variable clock rate: 0.5897 MHz-2 MHz, Ferranti Semiconductor ULA coprocessor

Memory: 32K RAM, 32K ROM

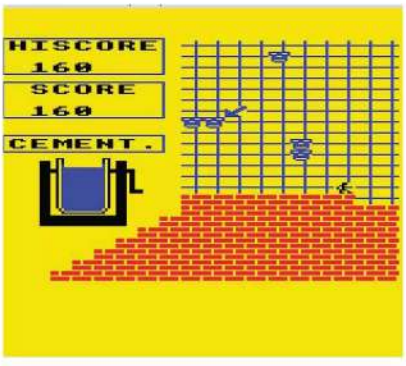
Connectivity: General expansion port at the rear (for Plus 1, Plus 3 and so on), cassette player connector, TV connector (RF modulator), RGB monitor connector

Sound: One-channel sound

Video Resolution: 640x256 pixels (Mode 0)

» *Repton* arrived on the system in 1984, and went on to become the Electron's bestselling game.

ACORN ELECTRON



» Tynesoft's *Auf Wiedersehen Pet*, unbelievably released at full price, possibly the worst game on the Electron, which also had arguably the most uninspiring artwork.

by £70 to go head-to-head at that price point, but the new mark undoubtedly put further pressure on the company – the Electron was widely known to be costlier to produce than the Spectrum.

Despite strong Christmas sales, the company suspended share trading five weeks into the new year after its share price dropped to 28p, down from a high of 193p the previous year. Redundancies followed, and Olivetti stepped in to mop up a cut-price 49.3 per cent stake in the company, increased to a massive 79.8 per cent a few months later. After recording a £10.8 million profit in 1984, Acorn was now reeling from a £22.2 million loss. "That was grim," says Hohenberg. "We just felt like 'oh my god – we've sold out to big brother'." Olivetti chairman Carlo De Benedetti criticised the company in an interview with *The Times*, observing that it'd tried to move into the US market "with forces totally inconsistent with their size, and their financial and managerial strength". A loss-making sub-£100 price tag was soon placed on the Electron, with the bulk of Acorn's warehoused stock 'distress sold' to Dixons. Profits were no longer an issue – Acorn needed cash, and fast.

Remarkably, however, the Electron went on to enjoy a successful year at its rock-bottom price. Figures released by market researchers AGB in May 1985 placed the machine as the joint number two bestselling computer in the UK, with a 15 per cent market share – way behind the Spectrum's 28 per cent, but the same as the C64. It was an unlikely showing for a machine all but written off in some quarters; even as early as September 1984, *Practical Computing* editor Jack Schofield described the Electron as "a crippled thing" and "poor value at any price".

With considerable software support now behind it, the Electron continued to sell well, and although it never got any closer to the Spectrum in the marketplace, its loyal users continued to demand games. One of the machine's main champions was Peter Scott. "I sort of felt all the 'proper' programmers worked exclusively on the BBC, shunning the Electron as it didn't have all the bells and whistles," he says. "It was half-speed in high-res or colourful modes and had single-channel sound that made porting games across from the BBC difficult. I always bore the differences in mind and tried to write games that worked fine on both. It did mean some of my games didn't push the BBC to the limit, but it meant the majority of players got a good game out of it, rather than one great version and one constrained conversion." Scott was renowned for his 'cute' sprites and puzzle-based adventures such as *Thunderstruck*, *Last Of The Free* and *Spycat*, but later became Superior Software's go-to guy for conversions. Ported titles included *The Last Ninja*, *Barbarian* and *Hostages*, but perhaps his finest hour was his outstanding version of *Sim City*. "I loved the challenge of fitting the massive disk-based C64 game into the Beeb," he says. "My proudest programming achievement, even if it didn't sell too well as the BBC and Electron market was in decline by then."

Another key Superior title was the huge space adventure *Exile*. While not as smooth as the BBC version, it was a considerable technical achievement. "The Electron version was the same basic game, except it ran slower," says Irvin. "The video controller was limited in that it couldn't produce the reduced size display needed to make more RAM available for the game. The visible, random border was in fact part of the game program code." Particularly towards the late-Eighties and early-Nineties, as programmers tried to claw back additional memory to push the machine further, unsightly fragments of code were commonplace on screen features in Electron games – a performance-to-prettiness trade-off most gamers were happy to make to enjoy a string of excellent releases.

In 1989, Steve Botterill and his late brother Mark formed 4th Dimension, one of the last major players to emerge on the Electron software scene. Its first success was with Gordon Key's *Holed Out*, an excellent golf simulator. "It used literally every bit and byte, and we were very proud of it," says Botterill. "Gordon's one of the most brilliant programmers I have ever met." 4th Dimension's other acclaimed titles included *White Magic* and the fabulous *Inertia*, as well as a very creditable conversion of the *Archimedes* racer *E-Type*. With Acorn-related magazines beginning to struggle, however, the market was in serious decline. The demise of *Electron User* in June 1990 effectively marked the end of the active market for the machine, although Superior continued to release occasional compilations of popular favourites, coupled with the odd unreleased title, in its long-running *Play It Again Sam* series.

Although dimmed from its heyday, the Electron torch still flickers, thanks to the emulator scene – and the efforts of the Electron User Group (EUG). The Electron is served by two fine emulators – Tom Walker's Elkulator and Thomas Harte's ElectrEm, which allow users to run disk and tape images, as well as the excellent disk image-based *EUG* magazine, currently run by **www.acornelectron.co.uk** founder Dave Edwards. Now up to issue 68, this annual magazine includes games, demos, utilities and reviews. Also flying the flag is the recently launched Retro Software label, which promises new Electron releases soon. "The first wave of games are nearly all being developed for the BBC Micro," says site co-founder Dave Moore, also the brains behind **www.stairwaytohell.com**. "However, it's hoped that we'll be able to port most – if not all – to the Electron." Titles lined up for conversion are arcade adventures *Mountain Panic* and *The Two Towers*, but perhaps most intriguing is an incomplete, unreleased sequel to *Repton 4* subtitled *The Lost Realms*.

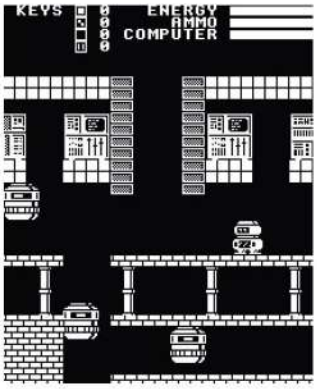
A quarter of a century on, opinion is still divided on the Electron. Many, particularly those who picked it up cheap, remember a well-built machine with excellent expansion capabilities and a sizeable catalogue of fine games. For those close to Acorn, however, thoughts are more rueful. "While I was happy enough with the look, performance and cost of the Electron," says Steve Furber, "it was a commercial disaster and contributed significantly to Acorn's downfall. So I wasn't very happy about that!" "We never had the critical mass," says Tom Hohenberg. "If we'd had 300,000 machines out there at the start, that would have created enormous demand for the software. But it missed its zeitgeist. If the bloody things had been there, it could have been a brilliant success."

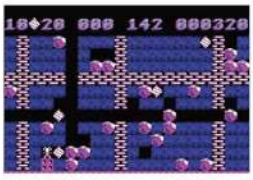
» Andy Williams' Electron version of *Paperboy* was a slow and flickery conversion, but despite poor reviews it still became a huge hit for the machine.

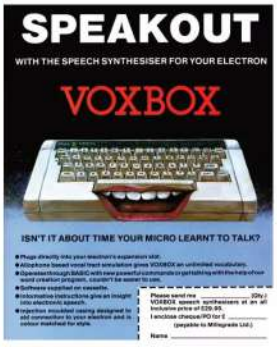
» The quiz-based *You're Alan Partridge*, a PD title released in 2006, made use of Millsgrade's Voxbox to incorporate speech into the game.

» Blue Ribbon's *Return Of R2* was a terrible attempt to capture the isometric magic of Ultimate's *Alien 8* and *Knight Lore* on the Electron, with this hopelessly crap vomiting monster just one cause of many frustrating deaths.

» Bug-Byte produced some fine titles at budget price, including the excellent maze-based shooter *Plan B*, which achieved ten out of ten in *Electron User*.







ELECTRON MAG-IC

In October 1983, Database Publications launched the first and only dedicated magazine for the Electron – *Electron User* – as a pull-out section in the Beeb-oriented *Micro User*, before it emerged as a standalone title in January 1984. Mixing news, reviews, type-in games, graphics demos and applications, it became hugely important to the future of the machine. "I guess it was a bit like *Web 2.0* today," says former editor Roland Waddilove. "Most content was user-generated and I think this is one reason why it was so successful." But what about those slow news months? "Sometimes we made it up. Yes, some of those stories about scout groups using Electrons to do their newsletters, accounts and memberships weren't real." While Acorn was struggling in 1985, the mag had an impressive 46 per cent rise in circulation, and survived well into the 16-bit era, eventually folding in June 1990.

electron user
Vol. 5 No. 9 July 1988 £1.25
3 great games
Battling Bunnies, Whist & Tennis
Plus 2 rom reviewed
Analyse your writing style with Easy Reader
Educational fun with Tilley the Train
COMPETITION

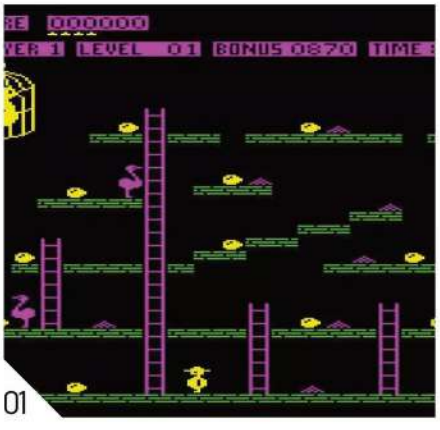
LET'S TALK ABOUT TEXT

The text adventure scene was huge on the Electron, helped enormously by *Electron User*'s adventure columnists Merlin (Paul Gardener) and Pendragon (Nic Outterside), who offered sage monthly advice to people stuck in those troublesome mazes. Key publishers included Robico, whose *Enthar Seven* and *The Rick Hanson Trilogy* (apparently not named after the boss of Superior Software) were great sellers. Shards' *Woodbury End* was a popular favourite, as was Epic's *Kingdom Of Klein*, and all of regular *Electron User* correspondent Geoff Larsen's adventures for his own Larsoft label. Making use of Gilsoft's The Quill, Larsen's games – including *Puppet Man* and *Wychwood* – were highly imaginative examples of the genre, in spite of the limitations of the software used to create them. Finally, for laughs, Melbourne House's *Terrormolinos* and *Hampstead* mixed humour with a decent challenge, while Riverdale's TV soap-based *SUDS* games skitted mercilessly on the likes of *Coronation Street* and *Dallas*.

ACORN ELECTRON

PERFECT TEN GAMES

Just because the Acorn Electron was a cut-down version of the BBC Micro that didn't mean it didn't sport a host of great games. Granted, some of them appeared on both systems, but if you're a fan, you'll find the following ten titles essential. If we've missed out any classics why not submit them in the form of a profile at **www.retrogamer.net**



01

CHUCKIE EGG

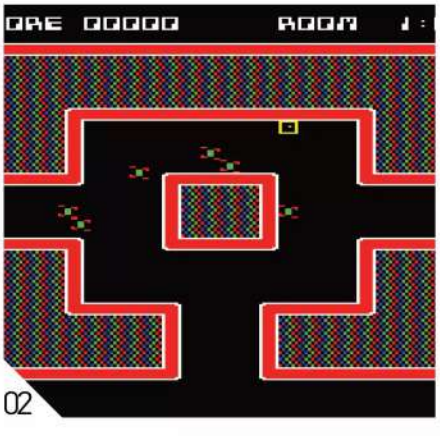
- **RELEASED:** 1983
- **PUBLISHER:** A&F SOFTWARE
- **CREATED BY:** NIGEL ALDERTON
- **BY THE SAME DEVELOPER:** CYLON ATTACK

01 In the tradition of *Donkey Kong* and *Miner 2049er*, *Chuckie Egg* was a simple, yet staggeringly addictive platformer featuring an everyman character in a very un-everyman situation. Nigel Alderton's golden egg collect-athon boasted a simple and solid control system, a protagonist who had the good sense to bend his knees when he landed from a fall, and wielded brilliantly that 'run and jump while collecting stuff' template. While many of our readers will no doubt have had dealings with the Speccy port, this version plays quite a bit differently. While it's a tad sluggish in comparison, the payoff is a game that feels slightly more solid, controls that feel less erratic, and, we think, on the whole just a fractionally better game.

CYBERTRON MISSION

- **RELEASED:** 1984
- **PUBLISHER:** MICRO POWER
- **CREATED BY:** MATTHEW BATES
- **BY THE SAME DEVELOPER:** BANDITS AT 3 O'CLOCK

02 *Cybertron Mission* is a neat Berzerk clone but with an emphasis on searching and destroying. Plonked inside one of the most dangerous environments we've seen in a game – a claustrophobic electrified maze, teeming with regenerating psychotic robots – it was your job to venture into the maze, gather a bunch of objects and then return them to a safe. Okay, so the plot could have done with some work but the action came fast and ferocious. Armed with a gun, and eight-directional aiming, the action could get pretty manic – especially at Level 3 when you had to face those annoying Cyberdroid enemies that bounced off walls. *Cybertron Mission* won't be to everyone's taste but there's nothing else quite like it on the Electron.


02

FRAK!

- **RELEASED:** 1984
- **PUBLISHER:** AARDVARK SOFTWARE
- **CREATED BY:** ORLANDO AKA NICK PELLING
- **BY THE SAME DEVELOPER:** BAGITMAN

03 At the other end of Chuckie Egg's limber-hero-spectrum sits *Frak!*, a platformer starring a caveman called Trogg who's suffering from acute osteogenesis imperfecta. While maddening there's something endearing about *Frak!*. The premise is simple: steer a fragile caveman through a level full of deathly statues and clean the screen of keys to advance. The game's level arrangements meant that clearing each level required lots of skill and patience. Incidentally, 'Frak' is said to be a bowdlerised version of the word 'F*ck', which is why Trogg spouts the word each time he dies – fracking potty mouth.

RANSACK!

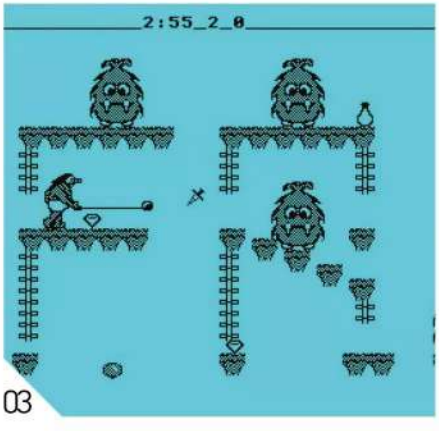
- **RELEASED:** 1987
- **PUBLISHER:** AUDIOGENIC LTD
- **CREATED BY:** PETER SCOTT
- **BY THE SAME DEVELOPER:** GRAHAM GOOCH'S TEST CRICKET

04 Written by Peter Scott *Ransack!* was a shoot-'em-up with a difference. Your ship, AI, must fend off wave after wave of enemy droids, flying saucers and odd phallic *Flesh Gordon*-style spaceships, while ensuring he didn't fall through gaps, or get impaled on spikes, that appeared intermittently on the planet surface. *Ransack!* is solid, looks great and is very simple. And the neat bonus round that bookends its stages – which sees your character trying to blast a barrage of alien enemies while bouncing off a small and moving baking tray – offered a quirky break to the gameplay.

REPTON

- **RELEASED:** 1985
- **PUBLISHER:** SUPERIOR SOFTWARE
- **CREATED BY:** TIM TYLER
- **BY THE SAME DEVELOPER:** SIM CITY

05 Despite the similarities between *Boulder Dash*, *Tim Tyler – Repton*'s creator – has always remained resolute that he'd never played *Rising Stars*' game. Regardless of whether it's a clone or not, *Repton* is a great game in its own right. Set across 12 stages, *Repton* finds you avoiding falling boulders and the deadly bites from spawning reptiles while trying to tidy the screen of diamonds cerebrally placed around the level. While it looked like *Boulder Dash*, if you boot both games up you'll notice there are some glaring differences between how they play. Basically, *Repton*'s puzzle action feels less chaotic than *BD*'s manic-panic gameplay.



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BUG EYES

- **RELEASED:** 1985
- **PUBLISHER:** ICON SOFTWARE
- **CREATED BY:** PACKRAT AND BIT BRAIN
- **BY THE SAME DEVELOPER:** DRAIN MANIA

06 ***Bug Eyes* is a novel take on the platform genre that finds your hero's jumping ability vetoed, forcing him to negotiate each screen with only the power to walk left or right.** Timing and precision is the order of the day here, and despite the lack of jumping power the game is still fiendishly challenging. The game is a neat take on analytical platformers like *Chuckie Egg* and *Manic Miner* by taking away the hassle of having to collect stuff. Your mission is to get from the top to the base of the screen without dying. Perhaps owing to its simplicity *Bug Eyes* is also annoyingly addictive, and an underappreciated Acorn classic.

THE LAST NINJA 2

- **RELEASED:** 1988
- **PUBLISHER:** SUPERIOR SOFTWARE
- **CREATED BY:** PETER SCOTT
- **BY THE SAME DEVELOPER:** RICOCHET

07 ***The Last Ninja 2* really shows off Peter's talent of milking the very best out of the Electron.** Boasting fluid animation and effusive visuals, this is a tour de force for the machine that doesn't shirk in any area. The game continues the series' brilliant isometric puzzle action-adventure recipe with aplomb, but this time supplants the faux-3D viewpoint from the swamps and gardens to a lovingly detailed New York locale. How Peter crammed this 500K C64 game into 35K still remains one of gaming's mysteries, but he did it, and along with his port of Will Wright's *Sim City*, *The Last Ninja 2* can stand tall as one of the best conversions on the machine.

EXILE

- **RELEASED:** 1988
- **PUBLISHER:** SUPERIOR SOFTWARE
- **CREATED BY:** PETER IRVIN / JEREMY C SMITH
- **BY THE SAME DEVELOPER:** BARBARIAN II

08 **You are Mike Finn, who, after finding himself stranded on a hostile alien planet, sets about venturing deep inside the sphere to find his team and confront a maniacal scientist.** Peter Irvin's *Exile* is an atmospheric side-scrolling action/adventure game set on a colourful and sprawling world. It's by far the most technically impressive and immersive Acorn game. Owing to its enormity, open-ended gameplay and impressive physics it struck a chord with many Electron owners, and its success on the machine would help it to find its way across a throng of formats.

09

ARCADIANS

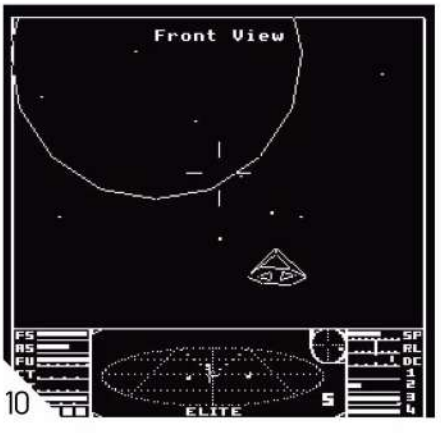
- **RELEASED:** 1982
- **PUBLISHER:** ACORNSOFT
- **CREATED BY:** ORLANDO AKA NICK PELLING
- **BY THE SAME DEVELOPER:** HOPPER

09 **A tough choice this one, it was one we pondered for a while.** The Acorn has three decent arcade conversions, and we only had room to put one of them in the top 10. It has a brilliant *Breakout*/*Arkanoid* clone called *Crack-Up*, a fair *Donkey Kong* clone – even if the controls are a wee bit fiddly – called *Killer Gorilla*, and this sublime *Galaxian* homage written by one of the machine's most respected coders. *Arcadians* is pretty slick but also very tricky – those pesky kamikaze aliens are unrelenting, but it's still great fun. It also looks spookily similar to the arcade game, down to the neat explosions that occur when the enemy insects get blasted to the way the front of your ship forms the weapon. It's just a great, great conversion.

ELITE

- **RELEASED:** 1984
- **PUBLISHER:** ACORNSOFT
- **CREATED BY:** DAVID BRABEN AND IAN BELL
- **BY THE SAME DEVELOPER:** FIREBUG

10 **When David Braben and Ian Bell set about writing *Elite* on their Acorn Electrons, little did they know the impact their free-roaming space trading game would come to have on the industry.** You simply can't talk about the Acorn, strategy or sandbox gaming without bringing Braben and Bell's interstellar opus to the fold. What makes *Elite* so special is that in many ways it's not just a game, it's a living, breathing, wonderfully realised universe – a virtual escape pod for you to go anywhere, do anything and explore to your heart's content. *Elite*'s virtual playground would capture the minds and imaginations of a generation, and is considered one of the most influential, innovative and immersive Electron games ever.



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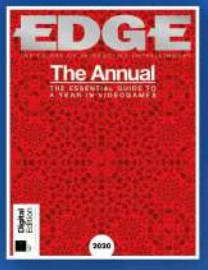

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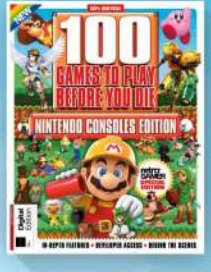

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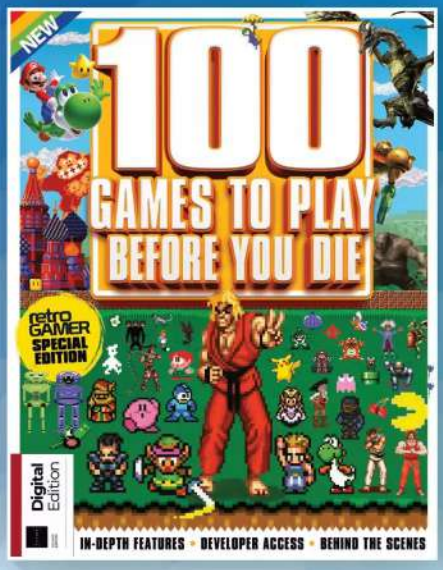

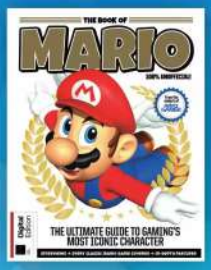

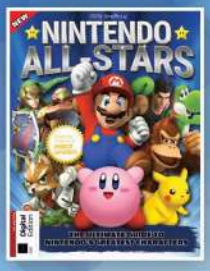

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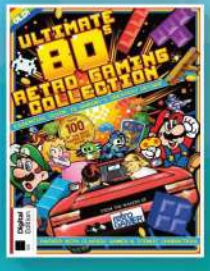

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